

No. 4.— *Reports on the scientific results of the Expedition to the Tropical Pacific in charge of Alexander Agassiz, on the U. S. Fish Commission Steamer Albatross, from August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. N., Commanding.*

XVI.

The Birds.

BY CHARLES HASKINS TOWNSEND and ALEXANDER WETMORE.

Part 1.— *Introduction and Field Notes.* By CHARLES HASKINS TOWNSEND.

THE voyage of the U. S. Fisheries Steamer ALBATROSS during the winter of 1899 and 1900, under the direction of Mr. Alexander Agassiz, was undertaken for the purpose of studying the coral-reef districts of the Tropical Pacific, making deep-sea explorations in the great ocean basins, and conducting investigations of the fisheries among the islands. A minor object of the expedition was the study of the fauna and flora of oceanic islands, but it became necessary to restrict this part of the program in order to investigate more thoroughly the structure and formation of coral reefs and islands.

The activities of the scientific staff took various directions at the islands visited, ornithology receiving some attention. The collection of birds brought back, ninety-three distinct forms and 406 specimens, does not represent any systematic effort to secure birds. It is rather the result of opportunities embraced from time to time, as the progress of the expedition permitted. Our stops were generally brief, except at points where coal or other supplies were renewed and some of these were islands already well known to ornithologists.

The preparation of bird skins being largely dependent upon the personal efforts of the writer, there was naturally a limit to the number which could be preserved. This usually meant night work, after the ship's laboratory had been cleared of the day's deep-sea dredgings, or the marine gatherings from the reefs. In the pleasanter work of collecting, assistance was more often available. Occasionally it became necessary to store birds in the ship's ice room for several days until an opportunity could be found to preserve them properly.

Specimens were obtained on thirty-three different islands. It is to

be regretted that more time could not have been spent in exploring certain well-forested islands, where unknown land birds may exist. The atolls and reefs yielded little but the widely distributed water birds.

The time of year spent among these islands lying so near the equator, that is our winter season, may explain the fact that no nests of resident land birds were seen.

It is evident that observations on the habits of birds could seldom be made during such hurried trips as we made ashore.

The expedition proceeded in turn through the Marquesas, Paumotu, Society, Cook, Tonga, Fiji, Ellice, Gilbert, Marshall, Caroline, and Ladrone Archipelagoes. These have been classified as Eastern Polynesia, comprising the Marquesas, Paumotu, Society, and Cook Groups; Central Polynesia, including the Samoan, Tonga, and Fiji Groups; the Central Coral Islands, of the Ellice, Gilbert, and Marshall Atolls, and Northwestern Polynesia, with the Caroline and Ladrone Groups.

Although the collection of birds brought back by the ALBATROSS is far from being a representative one, new species were met with in more than half of the groups visited, a fact indicating that there is still much to be learned about the birds of Polynesia. Some of the larger and better known islands have been but little explored ornithologically, and many of the smaller ones not at all. It is probable that the Fiji Archipelago with its 150 islands will eventually yield new birds.

Our knowledge of Polynesian birds does not extend much further back than the time of the United States Exploring Expedition, 1838 to 1842, under Captain Charles Wilkes, when extensive collections were made by Titian R. Peale, Zoölogist of the Expedition.

A period of about a quarter of a century appears to have elapsed before ornithological researches in this region were resumed. Since then there have been many contributions to the ornithology of Polynesia. More than 200 species of strictly land birds are now known to the archipelagoes visited by the ALBATROSS. As many of the genera prevail for thousands of miles through the region, the presence of its avifauna may be explained as the result of immigration. The distribution of a few species has been extended through the agency of human beings.

The long-delayed appearance of this report is due to the fact that the present writer left Washington soon after the return of the ALBATROSS and never had an opportunity to study the collection of birds brought back and placed in the U. S. N. M. He is deeply indebted to Mr. Wetmore for the careful study he has made of the material.

The ALBATROSS sailed from San Francisco on 23 August, 1899, arriving at the Marquesas Islands 15 September, having occupied twenty-seven sounding and dredging stations in depths varying from 687 to 3,088 fathoms on the way. Hydrographic work was carried on not only during the passage from one archipelago to another, but also at points among the islands composing the different groups.

THE MARQUESAS ISLANDS.—These are all high islands of volcanic origin and without coral reefs. The group consists of nine principal islands, with some outlying islets of small size.

The ornithology of the Marquesas, with the exception of Nukuhiva and Hiva-oa, is unknown. Most of the eleven land birds previously known came from the latter and its outlying island Tahuata or St. Christina. All of the larger islands are forested and may yield much of interest to naturalists. These are Motu Hiva, eight miles in length by four in width and over 3,600 feet high; Tau Ata, nine miles long by five wide and 3,200 feet high; Na-pu, about seven miles in diameter with a height of 4,000 feet; Ua-huka, measuring seven by five miles, and Eiao, six miles long and 2,000 feet in height.

NUKUHIVA, also called Marchand, was the only island of the Marquesas Group visited by the ALBATROSS, the vessel lying at anchor in the harbor of Tai-o-haé from 15–17 September. It is the largest of the Marquesas, being fourteen miles in length and ten in width. The island is mountainous, one peak rising to a height of 3,900 feet, with others nearly as high, while most of it is very rugged. The heads of some of the valleys are faced with steep cliffs, and there are many cascades falling from considerable heights. There are fertile valleys, little cultivated owing to a decreasing population, which now numbers less than 1,000. Nukuhiva is well forested and has the fruits common to Polynesian Islands.

Our stay was too short for anything more than desultory collecting of birds in the vicinity of the anchorage. It is quite possible that Nukuhiva has other birds than the species we obtained.

The land birds secured were Jungle cock (*Gallus gallus*), fruit pigeon (*Ptilopus dupetithouarsii*), swift (*Collocalia ocista*), and warbler (*Conopoderas percernis*), the last being a new species. All of these are common. The water birds were *Heteractitis incanus* and *Gygis microrhyncha*. The White noddy (*Gygis microrhyncha*) of which four specimens were secured, was seen high up in the mountains, flying across deep, forested ravines and occasionally observed resting on the trees. It also nests in trees. This species is apparently restricted to the Marquesas. Tropic birds (*Phaëthon rubricaudus*) were also seen

in the mountains at Nukuhiva. It was not uncommon for them to approach the vessel when we stopped for deep-sea sounding or dredging, and specimens shot from the deck could easily be recovered by lowering a boat. The first tropic birds were observed 600 miles north-east of the Marquesas.

Gallus has long been wild on the mountains of Nukuhiva. All the specimens that I killed looked very much like the richly colored one that was preserved. It was very interesting to hear the cocks crowing in the high woods. I found that they could fly like pheasants, making strong flights across wide ravines.

The large, thrush-like warbler of Nukuhiva (*Conopoderas percernis*) is the most interesting bird of the island and by far the best songster we heard in Eastern Polynesia. It is not uncommon to hear several of them singing loudly on a single tree. Herman Melville in "Typee" that classic of the Marquesas, says, "Birds, bright and beautiful birds, fly over the valley of Typee . . . but alas the spell of dumbness is upon them all — there is not a single warbler in the valley." This statement is altogether at variance with our experience. Everywhere about the village of Tai-o-haé, only a few miles from the valley of Typee, the woods rang with the melody of the warblers. This species is the size of a mockingbird and its sulphur-yellow under parts render it quite conspicuous.

THE PAUMOTU ISLANDS.—After leaving the Marquesas, the ALBATROSS proceeded through the Paumotu, Tuamotu, or Low Archipelago, making brief stops at a dozen of the islands. There are seventy-eight islands in this Group, the main body of which is more than a thousand miles in length. With few exceptions they are atolls with enclosed lagoons of considerable size. The atolls are usually well forested with cocoanut trees, the principal species, and with low trees and shrubs. They do not vary much in vegetation or general appearance. The population is limited, the entire Archipelago having not more than 4,000 inhabitants. The lagoons yield much valuable pearl shell, but the export of copra is probably of greater importance.

Our first anchorage was at Rangiroa, where the ALBATROSS remained at anchor from 21–24 September. Rangiroa, also called Rahiroa, Vliegen, Deans, and Nairsa, is an atoll with a great lagoon more than forty miles in length. The land birds obtained were the Blue lory (*Choriphilus peruvianus*) and a warbler (*Conopoderas atyphanesiarcha*), the latter described as new (p. 210).

The small Blue lory (*Choriphilus peruvianus*) obtained at Rangiroa and later at Bora Bora and Aitutaki, is a fairly common species and is

often kept as a pet by the natives, a custom which has aided its distribution. One which I secured at Rangiroa became very tame, and lived on board the ALBATROSS for several weeks, when it was drowned by falling into a pail of water. Its greatest delight was to walk back and forth on a light rope stretched across my stateroom. The water birds obtained were *Heteractitis ineanus*, *Megalopterus melanogenys*, *Procelsterna cerulea*, and *Sterna lunata*.

MAKATEA, (Metia, Aurora, Recreation), where the ALBATROSS made a brief stop on 26 September, was revisited for a few hours on 6 October. It is one of the few elevated islands in the Paumotu, having a height of over 200 feet, with perpendicular cliffs along the north shore. It has a length of five miles and is densely wooded, with many large trees. The higher parts are difficult to penetrate with the thickly tangled vegetation and massed pinnacles of sharply weathered limestone. Our stay was too brief to permit of collecting more than a few yards distant from the shore. The land birds found here were fruit pigeon (*Ptilopus coralensis*), large pigeon (*Globicera aurorae*), and warbler (*Conopoderas atypha crema*), the last being new. All are common. The water birds were *Pluvialis dominicus fulvus*, *Phacopus tahitiensis*, and *Anous stolidus pileatus*. This was our first meeting with the large pigeon *Globicera*. It is rather common and was observed later at Tahiti. This bird is called Ru-pee by the natives. The dense forests of Makatea doubtless harbor species of land birds which could only maintain themselves with difficulty in the scattered coconut groves of the atolls.

NIAU, also called Creig and Faau, is an atoll about four miles in diameter and is well wooded. It is somewhat higher than the neighboring atolls, having an elevation of twenty-six feet. Our stop on 7 October of two hours afforded little time for collecting. The only bird obtained was the fruit pigeon (*Ptilopus coralensis*) which is abundant.

APATAKI, sometimes called Hagemeister, is a partly wooded atoll eighteen miles in diameter. Anchoring on the evening of 7 October and sailing the following morning, only one bird was secured, a warbler (*Conopoderas atypha agassizi*), which, however, proved to be undescribed.

TIKEI, or Romanzoff, is a small, well-wooded island about three miles in diameter and with no central lagoon. The ALBATROSS anchored at Tikei for a few hours on 8 October. The only birds collected were *Conopoderas atypha atypha* and *Pluvialis dominicus fulvus*. I found here the egg of a White-crowned black noddy balanced

precariouly upon the horizontal limb of a low Pandanus, the parent bird covering it until I was almost near enough to seize it.

FAKARAVA, (Fakarawa, Wittgenstein), is one of the more important atolls, being about thirty miles in length and having three entrances to the great lagoon available for vessels. It is rather irregularly wooded. Although the ship remained from 10-14 October and numerous birds were collected, there were only two species, *Ptilopus coralensis* and *Conopoderas atypha atypha* (new).

Although at work among the islands for several days after leaving Fakarava, no anchorages were made until Makemo was reached on 19 October, where the vessel remained until the 25th. The only land birds found were *Ptilopus coralensis* and *Conopoderas atypha erypta* (new). The water birds collected were *Fregata ariel ariel*, *Pluvialis dominicus fulvus*, *Phacopus tahitiensis*, *Heteractitis incanus*, *Anous stolidus pileatus*, *Megalopterus melanogenys* and *Thalassus bergii rectirostris*.

The Crested tern (*Thalassus bergii rectirostris*) is rather common among the Paumotu Islands. At Makemo we found it frequently perching on stakes or piles along the shore of the lagoon near the village. The other sea birds found here are common throughout the Paumotus. Makemo, also called Philip Island, is a large atoll about forty miles in length, the northern part of which is well wooded.

TEKOKOTO, (Tekareka, Doubtful Island), visited 26 October, is nothing more than a tiny atoll a mile or so in diameter with a shallow lagoon. It is only a few feet high, a part of it being covered with bushes. These were heavily loaded with frigate birds and boobies, great numbers of them flying over the whale-boat as we searched for a landing. The surf proved altogether too boisterous for safety and the attempt was abandoned. We found frigate birds more numerous at Tekokoto than at any other island visited during the voyage. The natives of the Paumotus often keep tame frigate birds on perches near their houses. The birds are reared in captivity and are used after the manner of homing pigeons to carry messages among the islands.

It appears that the birds return promptly when liberated from quite distant islands. They are distributed by being put aboard small vessels trading among the islands. The birds are liberated whenever there is news to be carried, returning to their perches sometimes in an hour or less, from islands just below the horizon and out of sight of the home base. Generally they are in no great hurry. As the food of a frigate bird may be picked up almost anywhere at sea, there is no means of ascertaining how much time the bird loses in feeding *en route*.

It may also linger to enjoy its liberty with other frigate birds. At home it is usually tethered to its perch.

Mr. Louis Becke says they were used as letter carriers on the Samoan Islands when he was there in 1882, carrying messages between islands sixty or eighty miles apart. When he lived on Nanomaga in the Ellice Islands, he exchanged two tame frigate birds with a trader living on Naitao, sixty miles distant, for a tame pair reared on that island. The four birds at liberty frequently passed from one island to the other on their own account, all going together on visits to each other's homes, where they were fed by the natives on their old perches. Mr. Becke's pair usually returned to him within from twenty-four to thirty-six hours. He tested the speed of the "frigate" by sending one of his birds by vessel to Naitao where it was liberated with a message at half-past four in the afternoon. Before six o'clock of the same day the bird was back on its own perch at Nanomaga, accompanied by two of the Naitao birds, which not being at their perch on that island when it was liberated, it had evidently picked up on its way home.

The tame frigate bird returns regularly to its home perch at night. The use of the frigate bird as a carrier is referred to by the Rev. Dr. George Turner in Samoa a Hundred Years Ago, page 282.

The ALBATROSS did not anchor at Akiaki, but I made a hasty landing 30 October, obtaining specimens of a warbler (*Conopoderas atypha rava*), new. This island, also called Les Lanciers and Thrum Cap, is less than a mile in diameter. It has no lagoon, is wooded and is higher than the atolls.

On the 31 October the vessel reached PINAKI or Whitsunday Atoll, but no anchorage was found and my own boat was the only one that succeeded in making a landing through the dangerous waves that beat upon the reefs. This wonderful circular atoll, which has often been figured in works on geography, is a mile and a half in diameter, and is well forested, especially with cocoanut and Pandanus. There is a single shallow entrance to the enclosed shallow lagoon. The only birds obtained were a warbler (*Conopoderas atypha rava*) and a single sandpiper (*Aechmorrhynchus parvirostris*), one other being seen. The latter species was not observed elsewhere and the only other specimens known are those obtained by Peale on islands of the Paumotu Group. Landings at Pinaki are difficult and the atoll is uninhabited. This was the last island of the Paumotus on which birds were collected.

Although I made a landing on Here-Here-tue 3 November, no land birds were seen.

THE SOCIETY ISLANDS.—This group consists of ten principal islands and several small islets. They are high, rugged, and forested volcanic islands, usually with extensive coral reefs surrounding them. The barrier reefs often enclose large lagoons.

The first island reached was MEHETIA (Maitea, Osnaburg) where I landed for half an hour while the ship lay to, but found no land birds. Mehetia may be worth a careful examination by the ornithologist, as it is seven miles in diameter, 1,400 feet high, and is well forested. It is uninhabited. A specimen of *Sula leucogastra plotus* was obtained at this island.

TAHITI, formerly called Otaheiti, is the largest and most important of the Society Islands. It is in fact the largest in Eastern Polynesia, excepting of course the Hawaiian Islands which constitute an entirely separate group. Its greatest diameter is thirty-three miles and the highest peak has an elevation of 7,321 feet. The island is heavily forested, well watered, and has many fertile valleys which yield an abundance of the plant products of the tropics. There are numerous streams, many of which have at their heads waterfalls of great height. The population of Tahiti probably exceeds 10,000.

The ALBATROSS visited Tahiti twice, 27 September to 5 October, and again 6–15 November. The accumulated marine collections of the vessel were occupying so much space on board that it became necessary to pack and ship them from this point. This heavy task naturally interfered with the collecting of birds. Only six species of land birds were secured, fruit pigeon (*Ptilopus purpuratus*), kingfisher (*Todirhamphus veneratus*), swifts (*Collacalia ocista*, and *Collocalia thespesia*), weaver birds (*Lonchura castaneothorax*, and *Aegintha temporalis*), the last two being introduced. The native name for *Todirhamphus* is Ru-ru. No attempt was made to get water birds. Tahiti is poor in land birds, there being but few species besides those we obtained. One of these, the large pigeon (*Globiceera aurorae*), we met with at Makatea in the Paumotu. The Polynesian duck (*Anas superciliosa*), was seen in the crater lake of Vaihiria, where a hawk, said to have been introduced, was also seen. The frigate bird, tropic bird, and White noddy were found high up among the mountains. The kingfisher, *Todirhamphus*, is common in the heavily wooded sections. So far as our examinations show, it feeds entirely on insects, although frequenting the vicinity of streams inhabited by small fishes.

The next anchorage after leaving Tahiti was at BORA BORA (Bola Bola) 17–18 November, where three species of birds were secured,

Blue lory (*Choriphilus peruvianus*), kingfisher (*Todirhamphus tutus*), and the introduced weaver bird (*Lonchura castaneothorax*). A whole afternoon of diligent exploration failed to reveal any other species. The Blue lory, *Choriphilus*, is called Vè-ne, and the kingfisher, *Todirhamphus*, O-ta-tàri by the natives.

Bora Bora, like all of the Society Islands, is volcanic, surrounded with coral reefs. It is one of the most picturesque islands in Eastern Polynesia, with its range of craggy peaks, one of which rises to a height of 2,400 feet, and its encircling barrier reef dotted with cocoanut groves. It is heavily forested and has a population of about 600.

THE COOK OR HERVEY ISLANDS.—This group has nine rather widely separated islands, some of which are volcanic and rise to considerable heights. Others of less height are elevated coralliferous islands. All are forested and most of them are surrounded by barrier reefs, often enclosing lagoons.

The group has a native population of over 7,000. Six species of land birds have long been known, four of which are autochthonous.

Our stop of half a day at AITUTAKI, the only one visited, on 21 November, afforded little time for bird collecting. The only bird found was the Blue lory (*Choriphilus peruvianus*), of which I secured seven specimens. These were not different from those obtained at Rangiroa and Bora Bora. This common pet of the natives will probably be found on several other islands. Aitutaki has a length of four miles and a height of 450 feet. It is well wooded and watered and has a population of 1,500.

THE ISOLATED ISLAND OF NIUE. Niue or Savage Island, where we anchored for a few hours on 25 November, is an isolated coralliferous peak lying 600 miles west of Aitutaki and 250 miles east of the nearest part of the Tonga Group. Our soundings between Aitutaki and Niue revealed ocean depths exceeding 2,800 fathoms, and between Niue and the Tongas, depths exceeding 4,500 fathoms. It has a diameter of about ten miles, an elevation of 200 feet, and is well wooded. We saw trees perhaps sixty feet high. The island is fertile and has many breadfruit and mango trees. It has 4,000 inhabitants. The land birds secured were fruit pigeon (*Ptilopus porphyraceus*), parrot (*Vini australis*), cuckoo shrike (*Lalage whitmeei*), tree starling (*Aplonis brunnescens*), and a White-rumped swift (*Collocalia francica townsendi*), recently described by Oberholser from ALBATROSS collections as new. This species was also taken in the Tonga Islands. The genus is celebrated for the nest it builds against cliffs, from a secretion of its salivary glands, and which is marketed as "edible birds' nest."

It was observed at many points during the voyage. The cuckoo shrike (*Lalage*) and the tree starling (*Aplonis*) are both common at Niue.

This island probably has other land birds, as my brief search for birds was necessarily confined to the vicinity of Alofi village.

THE TONGA OR FRIENDLY ARCHIPELAGO consists of about 150 islands and islets, most of which are volcanic, others being of elevated coral-liferous limestone. The group is over 400 miles in length. There are small volcanic islands extending along the western side for about 200 miles, some of which are occasionally active and for that reason are uninhabited. The three most active volcanoes, Tofua, Kao, and Late, rise to heights of 1,700 to 3,000 feet.

In the Tongas we found land birds more numerous than in any of the island groups previously visited.

EUA, (Middleburg), the most southerly of this group, was visited 28 November. During the afternoon in the vicinity of Ohonua village, I secured six species, fruit pigeon (*Ptilopus porphyraceus*), cuckoo shrike (*Lalage pacifica*), tree starling (*Aplonis tabuensis*), honey eater (*Meliphaga carunculata*), swift (*Collocalia francica townsendi*), previously found at Niue, and kingfisher (*Sauropatis sacra rabulata*), new. A few other species were observed, but there was no time to search farther inland. Eua Island is ten miles long, 1,000 feet high, and is well wooded.

Fruit pigeons (*Ptilopus porphyraceus*) are abundant in the Tongas. Numbers could be shot early in the morning, on the wing, as they approached the high "berry trees" on the fruit of which they feed habitually. In Niue and the Tongas pigeons in general are known by the name Kulu-kulu.

TONGATABU, (New Amsterdam of the older charts), visited 29 November to 1 December, is the largest of the Tongas, with a length of eighteen miles and an elevation at one part of 200 feet. It is a rather level island in general and is partly wooded. It lies about ten miles from Eua. Some of the birds taken here were of the same species as those from Eua: — *Lalage pacifica*, *Ptilopus porphyraceus*, and *Meliphaga carunculata*. Another pigeon, *Ptilopus perousii*, was added to our list. The kingfisher *Sauropatis sacra sacra* was different from that of Eua.

NOMUKA, (Annamooka), lying sixty miles north of Tongatabu, is only two miles in length and has on one side an elevation of 160 feet. It is wooded and has a small lagoon. Our stop for a short time on the afternoon of 2 December resulted in the following additions to the

bird collection: — *Ptilopus porphyraceus*, *Sauropatis sacra sacra*, *Hypurolepis tahitica*, *Lalage pacifica*, *Aplonis tabuensis*, *Meliphaga carunculata*, wood shrike (*Pinarolestes heinei*), and Polynesian duck (*Anas superciliosus pelewensis*).

VAVAU, the last island in the Tongas visited by the Expedition, is 100 miles north of Nomuka. It is nine miles in length and in one part about 700 feet high. It is cultivated, wooded, and has a population of over 3,000. The ship lay off Neiafu village 4 and 5 December. The name Neiafu should not be confused with Niuafoou, the latter being an island about 200 miles north of Vavau. The birds of Niuafoou were made known by Finsch in 1877. It was not visited by the ALBATROSS. The birds taken at Vavau were *Ptilopus porphyraceus*, *Sauropatis sacra cclada* (new), *Collocalia francica townsendi*, *Lalage pacifica*, a shrike (*Pachycephala jacquinoti*), and *Aplonis tabuensis*.

Wild ducks were seen in the ponds. This island would probably repay careful ornithological exploration.

A single specimen of *Phuvialis dominicus fulvus* was taken at Vavau.

THE FIJI ISLANDS. This great archipelago contains about 150 islands and as many more islets and reefs. It extends through seven degrees of latitude and of longitude. The islands are of both volcanic and of coral formation, are densely forested, and have a native population of more than 100,000.

KAMBARA, where the ALBATROSS lay from 7 to 9 December, is a wooded, volcanic island, four miles long, with a height of 470 feet.

Two of the birds found in the Tongas, *Ptilopus porphyraceus* and *Lalage pacifica*, were also found here. The other land birds were *Aplonis vitiensis*, honey eater (*Myzomela jugularis*), *Halcyon sacra vitiensis*, flycatcher (*Myiagra townsendi*), and wood shrike (*Pinarolestes nesiotus*), the last two being new species.

The honey eater, *Myzomela*, was the only species that appeared to be common near the village of Tokalau, where all the birds were obtained. Its native name is Bithi-bithi Kula. The new flycatcher, *Myiagra*, is called Sia-sia. Other birds might have been found in the higher woods, had there been time to search for them. There are apparently no records to show that Kambara had ever been visited by naturalists. There are perhaps a dozen islands in the Fiji Group, of the size of Kambara, about which naturalists have no information.

THE ALBATROSS arrived at Suva, VITI LEVU ISLAND, 10 December, and remained until the 19th. Viti Levu, largest of the Fijis, is also the largest island of Eastern or Central Polynesia, having an area of over 4,000 square miles. Its highest peak has an elevation of 5,000

feet. The rainfall is heavy and the largest river is navigable for small vessels for forty miles. It is heavily forested and the climate is that of the moist tropics. Parts of Viti Levu are well cultivated and the population is large.

Work pertaining to the fisheries and to ethnological collecting prevented systematic bird collecting in Viti Levu, but the following were secured:—*Lalage pacifica*, *Myzomela jugularis*, *Meliphaga procerior*, *Zosterops flaviceps*, *Aeridotheres tristis*, and flycatcher (*Haplorhis lessoni*).

The Mynah (*Aeridotheres tristis*) is common. I did not ascertain when it was introduced. I found it abundant in the Hawaiian Islands twenty-five years ago. It is also common in Tahiti. Wherever introduced it becomes a menace to the native island species. The same may be said of the Mongoose now common on Viti Levu.

I was detached from the expedition at Suva and returned home by way of Samoa, the ALBATROSS proceeding northwestward through the Ellice, Gilbert, Marshall, Caroline, and Ladrone Islands to Japan.

THE SAMOAN ISLANDS. The birds picked up at Apia, UPOLU ISLAND, 26 December, were a parrot (*Vini australis*), kingfisher (*Todirhamphus recurvirostris*), honey eater (*Myzomela nigricentris*) and *Meliphaga carunculata*. The last is rather widely distributed, having been previously taken at several points in the Tongas.

Dr. H. F. Moore took up the work of bird collecting after I left the ALBATROSS in the Fijis. He found the bird life of the Caroline Islands richer and more varied than in any of the groups visited during the voyage:—

“In the Ellice, Gilbert, and Marshall islands land birds are extremely uncommon and of but few species, the avifauna being poorer than in the Paumotu. The Society and Fiji Islands are progressively richer, but it was not until the Carolines were reached that the woods and thickets seemed full of birds and resounded with their songs and cries. Parrots and pigeons of several species, white-eyes, flycatchers, kingfishers, and many other species were observed at Kusaie, Ponape, and Truk, and the collections, which, in spite of effort, had languished for lack of material after leaving Suva, began to offer some returns to the shooters notwithstanding the brevity of the opportunities, which made it impossible to secure a really representative collection.”

THE ELLICE ISLANDS, extending in a northwesterly direction for 360 miles, are low atolls, most of them with central lagoons. Funafuti, the only one from which birds were taken, is an atoll thirteen miles long. It was visited 23 December. The land birds were the large

pigeon (*Globicera pacifica*), and a cuckoo (*Urodynamis taitensis taitensis*), said to lay its eggs in the nests of the noddy terns. These are the only land birds known to this group of islands. The water birds were *Pluvialis dominicus fulvus*, *Heteractitis incanus*, *Limosa lapponica baueri*, and the noddy (*Anous stolidus pileatus*).

THE GILBERT ISLANDS, having about the same extent as the Ellice Islands, are also atolls. Land birds were not obtained, but the following water birds were taken at Taritari (Butaritari) 6 January: *Arremonia interpres oahuensis*, *Phacopus tahitiensis*, *Heteractitis incanus*, *Pluvialis dominicus fulvus*, and *Pisobia acuminata*.

THE MARSHALL ISLANDS. The ALBATROSS cruised among the low atolls of the Marshall Islands from 9 January to 5 February. Land birds were not obtained. The water birds were the same species as those taken in the Gilberts with the exception of *Sterna sumatrana* from Arniho Atoll, 24 January. Two land birds are known to the Marshall Islands, *Urodynamis taitensis* *Globicera* and *oceanica*.

THE CAROLINE ISLANDS. The high volcanic islands of the Caroline Archipelago proved to be rich ground for bird collecting after a long cruise among the ornithologically barren atolls.

The ALBATROSS was at KUSAIE (Ualan, Strong) from 7 to 9 February. This is a volcanic island twenty-four miles in circumference and over 2,000 feet high. It is heavily forested and well watered. The land birds taken were *Ptilopus hemsheimi*, *Aplonis opaca*, *Myzomela rubrata rubrata*, *Zosterops cinerea*, and *Globicera oceanica oceanica*. The water birds were *Demigretta sacra*, *Heteractitis incanus* and *Anous stolidus pileatus*. About nine species of land birds were previously known to inhabit Kusaie.

PONAPÉ, or Ascension Island, was visited 11 and 12 February. It is a volcanic island which, with its surrounding coral reef, has a diameter of about seventeen miles. It has a height of nearly 3,000 feet, is heavily forested and well watered. The land birds taken were *Zosterops ponapensis*, *Aplonis opaca*, *Myzomela rubrata dichromata* (new), *Conopodera syrinx*, *Myiagra pluto*, *Rhipidura kubaryi*, *Sauropatis mediocris*, *Eos rubiginosa*, and *Globicera oceanica townsendi* (new). About eighteen species of land birds were known to Ponapé when reported upon by Finsch in 1880.

UALA, or Moen, is one of the small but lofty volcanic islands known as the Truk, Ruk or Hogelu Group all lying within a great lagoon. Truk is the largest atoll of the Carolines, the circumference of the lagoon enclosed by the outer barrier reef being 125 miles. Uala is 1,300 feet high and Ruk 1,000, while several of the others are nearly

as high. All of the islands are wooded and have a total population of several thousands. The ALBATROSS anchored at Uala 14-17 February, where the following birds were collected:—*Ptilopus ponapensis*, *Metabolus rugensis*, *Myiagra oceanica*, *Conopoderas syrinx*, *Zosterops semperi oustoni*, *Aplonis opaca*, and *Myzomela rubrata rubrata*. Water birds secured were *Nycticorax caledonicus*, *Ixobrychus sinensis moorei* (new), *Pluvialis dominicus fulvus*, *Arenaria interpres oahuensis*, and *Heteractitis brevipes*.

The adjacent islands of the lagoon were not visited. One of them, Ruk, had eleven species of land birds when reported upon in 1900.

THE LADRONE ISLANDS. Guam, visited 21 to 25 February, was the last island at which birds were collected during the cruise. This island is partly volcanic and partly elevated coralliferous limestone. It is twenty-two miles in length, forested, and has a height of 1,000 feet. The only land bird collected was the quail (*Excalfactoria chinensis lineata*) introduced from the Philippines. The water birds obtained were *Phacopus phacopus variegatus*, *Gallinula chloropus*, and *Ixobrychus sinensis bryani*. Twenty-seven species of land birds are known to the island of Guam. The expedition proceeded northward through the Ladrone or Mariana Islands, arriving at Yokohama 4 March, 1900.

Part 2.—*Annotated List of the Species.* BY ALEXANDER WETMORE.

THE collection of birds made during the cruise of the ALBATROSS in Polynesia during the winter of 1899-1900 numbers 391 skins, fourteen alcoholic specimens, and one skeleton. These specimens represent ninety-three distinct forms, of which fourteen are here described for the first time.¹ Collections of birds were made on thirty-three islands some of which were little known and were visited by an ornithologist for the first time. The entire collection has considerable general interest, as a number of species were collected at their type-localities, and in several cases important series of such birds were secured. In working out this rich material I have been under deep obligation to Dr. C. W. Richmond, Associate Curator of Birds in the U. S. N. M., for advice and assistance in matters pertaining to bibliography and nomenclature. At one time Dr. Richmond had planned to publish on this collection personally but was prevented

¹ Three new species of *Collocalia* collected during this cruise of the ALBATROSS were described by Oberholser in 1906, see p. 200-201.

from carrying out his intention by press of other work. In completing the identification of these specimens he permitted the use of manuscript notes, made during his preliminary examination, that have proved of much value.

Much difficulty has been encountered in identifying the subspecific forms in many species discussed in the following pages through lack of sufficient material for comparison. These cases have been treated with as much care and attention as practicable, but in some instances it has been impossible to assign anything more than a specific name. In such comparisons the early collections of Titian R. Peale, made during the U. S. Exploring Expedition of 1838-1842, have been of great value. The importance of the birds in Peale's collections from an historical standpoint is not to be over-estimated, especially as a large part of the original type-specimens upon which Peale based his names of new species have been available for study. This collection was formerly mounted, but now all of the birds have been taken down and remade and are kept as study skins.

The treatment of the fruit pigeons of the genus *Ptilopus* in the present paper is highly unsatisfactory. The entire group of these pigeons is badly in need of revision, but in the present case this was impracticable because of a lack of sufficient material from many localities. Little attempt has been made here to accord the species any other treatment than that given them by Count Salvadori in the twenty first volume of the British Museum Catalogue of Birds, but it is believed that a number of new forms may be described eventually from the specimens listed herein. Additional collections from other islands are needed, however, before these may be diagnosed properly.

A series of 105 skins, forty-seven species or subspecies, from the specimens collected during the ALBATROSS expedition, has been placed in the M. C. Z. The remaining specimens, including the types of forms described here as new, are in the collections of the U. S. N. M.

In the following pages is given an annotated list of the species and subspecies identified, with descriptions of such forms as appear to be new. All measurements are given in millimeters.

PHAETHONTIDAE.

1. PHAËTHON RUBRICAUDUS Boddaert.

Phaëton rubricauda Boddaert, Tabl. plan. enl., 1783, p. 57. (Mauritius).

Three specimens were collected at sea about 600 miles east of the Marquesas Islands in Latitude 10° N., Longitude, 130° W., 2 September, 1899. All three are immature. One has the upper parts heavily barred with black, but in the other two these markings are less evident. The red-tailed tropic-birds without doubt are divisible into two or more subspecies, but in the absence of material from many localities needed for a competent review of the forms no attempt is made to allocate the present specimens subspecifically. The fact that all are immature would add to the difficulty of such an identification. The measurements of these birds are as follows:—

No.	Sex	Wing	Tail	Culmen	Tarsus
U. S. N. M. 212,164,	♀	313	232	63	28
“ 212,165,	♂	314	201	62	28.5
M. C. Z. 81,927 (“ 212,166)	♀	301	190	61	29.5

These skins are similar in size to specimens from Laysan Island, in the Hawaiian Group.

It has been proposed by Mathews (Austr. avian record, 1913, 2, p. 56) to separate the Red-tailed tropic-bird from Phaëthon under the generic name *Scaeophaëthon*, on the grounds that it has a longer wing, stronger legs and feet, and shorter tail. Upon careful comparison it is found that all of these characters do not hold. Thus when compared with *Phaëthon aethereus*, the type-species of the Linnaean genus Phaëthon, specimens of *P. rubricaudus* from Assumption and Gloriosa Islands (north of Madagascar) do have the wings longer. On the other hand red-tailed birds from Laysan Island have the wing equal to or shorter than that of the red-billed species. In other words birds from these two localities, representing only well-marked forms of one species, would be placed in different genera on this character. The feet and tarsi are slightly stronger and the tail is shorter in *rubricaudus* when series of the two species are compared. There is so much individual variation in respect to length of tail that it is of value only as an average character. In addition there are other

structural characters separating the two that Mr. Mathews overlooked. From the series available it seems that *Scaeophaethon* has the operculum over the nostril broader and heavier, and barbs on the shafts of the two elongate rectrices on either side greatly reduced in length. This latter character is one by which *Scaeophaethon* may be recognized at a glance. The black line at the side of the black shaft in *P. rubricaudus* is misleading as it makes the shaft appear broad and strong while in reality it is the same size as the shaft in *P. aethereus*. When old and much worn the central rectrices of *P. aethereus* become narrowed and resemble those of *Scaeophaethon* but may be distinguished by their ragged appearance. As the small-billed *P. americanus* also has a strong broad operculum the basis of differentiation falls upon differences in the tail alone. These are assumed here to be only subgeneric in value and the Red-tailed tropic-bird is kept in *Phaëthon*.

SULIDAE.

2. *SULA PISCATOR* (Linné).

Pelecanus piscator Linné, Syst. nat., ed. 10, 1758, 1, p. 134. (Java Seas).

Three specimens of this booby were collected at Tekokoto in the Paumotu Islands, 26 October, 1899. None of these is in adult plumage though all are one year old or more. One specimen, a male, has the tail and head white, while the back and lesser wing coverts are hair-brown. In the two remaining specimens the tips of the rectrices are white and the rest of the plumage is dull.

Mathews (Birds of Australia, 1915, 4, pt. 3, p. 216) states that specimens of this booby from the Pacific Ocean are larger in every dimension than those from the Atlantic region and that "the soft parts seem to differ." For this reason he separates the Australian bird under the subspecific name *rubripes* Gould. Concerning the color of the soft parts information of value is not available, but comparison of a series of skins from Pacific and Atlantic Ocean localities fails to substantiate the claim made as to difference in size. So far as measurements of wing, culmen, and tarsus go, specimens from the Paumotu Islands are almost identical with birds collected by the author on Desecheo Island, a small island lying between Porto Rico and Santo Domingo in the West Indies. Careful study of a larger

series than that at hand will probably show that birds from the different ocean areas may be separated as subspecies, but for the present it is thought best to use the specific name for the birds in hand without attempt at subdivision. Especially this is the case since no Australian specimens are available for comparison.

The question of the separation of the Sulidae into genera is one that is subject to individual opinion more or less. There is no question that the three species of gannets form a well-characterized genus; but that there are trenchant lines separating the smaller species known as the boobies into groups that may be considered of generic rank, seems at present uncertain. The differences indicated rather signify only subgeneric differences. For the present it is proposed to ignore them and to include all of the smaller Sulidae in *Sula*, pending further study of available material that may throw light on the subject from another angle.

Recently Mathews (*Birds of Australia*, 1915, 4, pt. 3, p. 212) has replaced *Pelecanus piscator* Linné, the name in common use for the Red-footed booby, by *Pelecanus sula* Linné, on the grounds that *Pelecanus piscator*, as used by Linné, was a name based upon a composite species, and that the form to which it properly belonged was indeterminate. The original name, however, must stand, as the following will show.

The name *Pelecanus piscator* appears in the tenth edition (1758) of Linné's *Systema naturae* on page 134. The description there is meager, and, as Mathews has shown part of the references there given are indeterminate, while a part belong properly to the bird known at the present time as *Sula leucogastra* (Boddaert). This, however, does not hold for all the citations noted. The first reference is, literally transcribed, "Chin. Lagerstr. 8." Mr. Mathews cites this but evidently did not have the work available, and so was forced to base his argument upon the second reference to "Osbeck iter, 85." The paper cited as "Chin. Lagerstr." is an inaugural dissertation entitled *Chinensia Lagerströmiana* by John L. Odhelius. From Dr. C. W. Richmond it is learned that this was printed first, as a separate publication of 36 pages, in 1754. Later in 1759 it was reprinted as number 4 in a collection of inaugural dissertations known as the *Amoenitates academicae*. A copy of this reprint is available and on reference it is found that species number 8 is given as "*Pelecanus (piscator)*." The pertinent portion of this reference is quoted here in full, as the tract in question is rare and not to be found save in large libraries: —

"8. *Pelecanus (piscator) rostro serrato, cauda cuneiformi.*

A. *Anseri bassano affinis fusca avio.* Sloane jam.

B. *Anseri bassano congener cinereo-albus.* Sloane jam.

præf. 31. t. 6. f. 1. Raj. aves 191.

Bubbi chinensibus.

Hujus duo adsunt sexus.

MAS (α) *totus niger, abdomine canescente.*

FEMINA (β) *tota albida, remigibus nigris.*

Rostrum utrisque gibbum, in fœmina præcipue sanguineum,

marginè tenuissime retrorsum

serrato.

Gula nigra.

Corpus magnitudine anatis majoris.

*Pedes sanguinei, magni, tetradactyli, digitis omni-
bus com-*

muni membrana junctis; unguis intermediï margo interior

dilatatus & fere pectinatus.

Alæ utriusque sexus subtus albicant.

Rectrices caudæ XIV, interioribus sensim longioribus, in

fœmina etiam parum fusciscentibus."

There is little question that the male and female described above belong to separate species of which the female is the bird now known as *Sula piscator*.

Linné himself recognized that this name covered a mixture of two species, and in his twelfth edition of the *Systema naturæ* (1766, p. 217) he again gives *Pelecanus piscator* with a slightly different diagnosis, and the reference "Amoen. acad. 4, p. 239. femina." This citation refers to the reprint published in 1759, on page 239 of which is found the description as quoted above. Linné as first reviser of the species has here restricted the name *Pelecanus piscator* to the female of the bird described by Odhelius, and there can be no doubt but that the Red-footed booby is intended. Mathews objects to Linné's statement that the flight feathers are black on the grounds that in the Red-footed booby the outer webs of the quills have a hoary gray appearance. This is true, but at the same time the body color of the feather is black, and to a casual inspection the entire feather appears blackish. The older naturalists were not so critical of color differences as are ornithologists today, so that we may overlook this slight error as the rest of the description tallies closely. Because of this statement that the wing feathers are black Mr. Mathews suggests that the bird described was *Sula abbotti* Ridgway, a species with intensely black flight feathers. This cannot be true, however, as Odhelius

states that in his *Pelecanus piscator* there are fourteen rectrices while the type of *Sula abbotti* (the only specimen available) possesses sixteen. The name *Pelecanus piscator* Linné, therefore, is still available for the Red-footed booby.

3. *SULA LEUCOGASTRA PLOTUS* (Forster).

Pelecanus plotus Forster, Descrip. anim., 1844, p. 278. (Near New Caledonia).

An adult bird was taken on Tekokoto, Paumotu Islands, 26 October, and another was preserved as a skeleton from Mehetia, in the Society Islands during November, 1899. The skin from Tekokoto, with other birds examined from the Hawaiian Group and elsewhere in the Pacific, agrees with Mathews's description of the Australian form (Birds of Australia, 1915, 4, pt. 3, p. 234) and differs from birds from the Atlantic region, in darker coloration above and in being slightly larger in size. No specimens have been examined from Australia in the present connection, but it is assumed that they are the same as the bird from the Paumotu Group. The difference in color between these birds, and those from localities in the Atlantic Ocean is well marked, and the races thus indicated seem to be well defined.

FREGATIDAE.

4. *FREGATA MINOR PALMERSTONI* (Gmelin).

Pelecanus palmerstoni Gmelin, Syst. nat., 1789, 1, pt. 2, p. 573. (Palmerston Island).

One specimen was taken, a female labeled "Polynesia." This bird has the throat and breast white, and the abdomen black. The culmen measures 117 mm., the wing 595 mm. A specimen in the U. S. N. M. from Kauai and two others from Laysan Island, in the Hawaiian Group, have the feathers of the "wing bar" with paler edgings than in this bird, and with a larger series it may be possible to recognize the form named *strumosa* by Hartert, as Mathews has done. In addition these three northern birds have a metallic sheen on the feathers of the back which is lacking in the specimen from Polynesia.

5. FREGATA ARIEL ARIEL (G. R. Gray).

Atagen ariel Gray, Gen. birds, 1845, 3, plate 183. (Raine Island, North Australia).

One specimen, a male, was taken at Makemo, Paumotu Islands, 25 October, 1899. The culmen measures 86.5 mm. and the wing 495 mm. The gular pouch is not at all developed. There are so few specimens of this frigate-bird available that it is difficult to make out the forms into which it may properly be divided. The bird in hand is referred to the typical form.

ARDEIDAE.

6. DEMIGRETTA SACRA SACRA (Gmelin).

Ardea sacra Gmelin, Syst. nat., 1789, 1, pt. 2, p. 640. (Tahiti).

Seven specimens were collected in the Paumotu Islands, the Gilbert Islands, and Kusaie in the Eastern Carolines. Two males from Makemo in the Paumotu Islands, were collected, 20 and 23 October, 1899, respectively. One is in fine dark plumage, while the other is white save for the elongate dorsal plumes. Of two birds collected at Rangiroa on 21 September, one sexed questionably as a female is also white with dark markings on the longer feathers of the back, while the other (a female) has the crown, sides of neck, breast, wings, and tail pied with dark markings, with white as the predominant color. Two males were taken at Tarawa, Gilbert Islands, 3 January, 1900; one is entirely white, while the other is pied as described in one bird from Rangiroa. A male from Kusaie, collected 8 February, 1900, has one dark feather among the right scapulars, but is white elsewhere. This specimen and the white bird from Tarawa are remarkable in having the elongate dorsal plumes white.

The status of the white and dark birds is somewhat uncertain, some ornithologists considering them to be distinct species. As dichromatism is so well known among other herons it is only reasonable to suppose, however, that these birds represent a similar case in the reef-herons. There are evident no structural characters by which light and dark birds may be separated, and color in this instance must be

considered wholly unreliable, as is shown by the description given above of the specimens in hand. For the present these are referred to the typical subspecies.

7. NYCTICORAX CALEDONICUS (Gmelin).

Ardea caledonica Gmelin, Syst. nat., 1789, 1, pt. 2, p. 626. (New Caledonia).

An adult female was taken at Uala in the Middle Carolines, 16 February, 1900. This bird is seemingly in fully adult plumage but lacks the long white nuchal plumes found in this species when in full nuptial dress.

It is darker above than birds from New South Wales (*N. c. hilli* Mathews), Waigou, and New Guinea, and has the axillars and under wing coverts heavily washed with buff-pink, a character lacking in the few other specimens examined, though said to be found in some Australian birds. A dark purplish wash on the back is especially noticeable in this specimen when compared with others and the bill seems thick and heavy. The measurements of this bird are as follows:—wing 280 mm., tail 97 mm., tarsus 80 mm., exposed culmen 62 mm. The length of culmen is uncertain as the bill seems to have sustained some injury near the base of the culmen that has caused distorted feathers to come farther forward on the forehead than usual. On the right foot this specimen had lost all of the phalanges of the middle toe save the basal one and the nail from the second toe, leaving only well-healed stumps at the tips of these digits.

Apparently the Caroline Island bird represents a form characterized by dark coloration above, a pinkish wash on the under wing coverts, and a thick rather short bill. The short bill serves to separate it from *N. c. crassirostris* from the Bonin Islands, and the dark coloration from *N. c. hilli* Mathews from Australia. No material from New Caledonia, the type-locality of *caledonicus*, is available, so that I find myself unable to definitely name or differentiate the Caroline form.

The bill in the present specimen, as in all others that have been examined, has the basal portion of the mandible yellowish and the tip of the mandible and the maxilla black. It is said that *N. caledonicus* at times has the entire bill black as in *N. manillensis* Vigors, but I have seen none that exhibit this character. Mathews (Birds of Australia, 1914, 3, pt. 6, p. 460) says, in his description of *N. c. hilli*, that the bill is black, and it is so figured in the plate that he gives of this night heron.

8. *IXOBRYCHUS SINENSIS BRYANI* (Seale).

Ardetta bryani Seale, Occas. papers Bernice Pauahi Bishop mus., 1900, 1, no. 3, p. 27. (Guam).

An immature male of the Little yellow bittern was taken on Guam, 24 February, 1900. Comparison of a large series of these small bitterns in the U. S. N. M. from various localities (including adult birds taken on Guam) shows that the bird described by Seale as *Ardetta bryani* may be recognized as a valid form of the widespread *Ixobrychus sinensis*.

9. *IXOBRYCHUS SINENSIS MOOREI*, subsp. nov.

Characters.—Similar to *Ixobrychus sinensis bryani* (Seale) from Guam but back darker and duller in color, more grayish; distal portion of scapulars and tertials duller, and grayer; sides of head and neck much more pinkish, this color sharply defined from buff of throat, and not merging gradually into it; sides of neck much brighter, more pinkish brown.

Type.—U. S. N. M. 212,171. Adult male. Polynesia: Middle Caroline Islands; Truk Group, Uala, 16 February, 1900. H. F. Moore.

Description.—Feathers of crown dusky neutral gray, changing to deep neutral gray at sides and on elongate crest, a slight brownish wash evident anteriorly; feathers of hind neck cameo-brown, this color extending to shoulders; back bister, with a slight intermixture of snuff-brown; rump deep mouse-gray, shading into blackish mouse-gray at tips of upper tail coverts; elongate scapulars between snuff-brown and bister; tertials mouse-gray, the longer ones washed at the tips with snuff-brown; primaries black, the outer one margined indistinctly with paler, especially near tips, the others washed somewhat with neutral gray; outer secondaries black, washed lightly with neutral gray, inner ones snuff-brown; greater, middle, and lower lesser coverts between honey-yellow and isabella-color, with a slight wash of warm buff; shoulder and upper lesser coverts snuff-brown; large feathers of alula dusky neutral gray, the outer one margined broadly with light buff; anterior margin of wing white with a faint buffy tinge; sides of head and neck between mikado-brown and verona-brown, this color sharply differentiated from lighter color of throat and neck, somewhat less sharply demarked posteriorly; throat white with a very faint tinge of buff; foreneck pinkish buff, becoming

nearly white toward upper breast; a dark patch on either side of upper breast, that is almost concealed by elongate feathers of neck, fuscous black above changing to deep mouse-gray below, the feathers all broadly margined with pinkish buff; rest of breast and sides dull cream-buff; abdomen and under tail coverts white, very faintly washed with buff; flanks honey-yellow; axillars and under wing coverts white, faintly tinged with buff; a small area of honey-yellow at bend of wing on under side. Distal half of culmen brownish black; rest of maxilla, except basal part of tomia, dull dark brown; base of mandibles, gonys, and maxillar tomia at base pale dull brownish buff; tip of mandible and sides dark dull brown; loreal space dull brown; eye ring somewhat paler; tarsus and toes dark, dull brown, claws darker (from dried skin).

Measurements.—Male adult (*Type*) wing 128.5; tail 44; culmen from base 53.5; tarsus 45.2.

Range.—Island of Uala, Truk Group, Middle Caroline Islands, Polynesia.

Remarks.—This subspecies is based on a single specimen taken on the island of Uala. The differences noted in this one bird are not approached by individual variation in the large series of little yellow bitterns examined, so that there is no question but that the divergence shown is of subspecific value. In size the type of the new form characterized here is slightly larger than *Ixobrychus sinensis astrologus* Wetmore (Proc. Biol. soc. Washington, 1918, **31**, p. 83) recently described from the Philippine Islands, and, like *I. s. bryani* from Guam, it resembles the Philippine Island bird in color. It may be distinguished from *I. s. astrologus* by being darker, grayer, less rufescent on the back, by having the tertials and scapulars duller and less brownish, the under tail coverts whiter, and the sides of head and neck brighter brown, more sharply defined from the color of the median line.

From the material at hand it is possible now to recognize the following races of the little yellow bittern:—

IXOBRYCHUS SINENSIS SINENSIS (Gmelin) (*Ardea sinensis* Gmelin, Syst. nat., 1789, **1**, pt. 2, p. 642. China). China (Tientsin, Hankow, Tung Chow, near Hongkong).

IXOBRYCHUS SINENSIS LUTEOLUS (Stejneger) (*Ardetta luteola* Stejneger, Proc. U. S. N. M., 1888, **10**, p. 289. Wakayama, Kii, Hondo) Japan (Islands of Yezo, Nippon, and Hondo).

IXOBRYCHUS SINENSIS LEPIDUS (Horsfield) (*Ardea lepidus* Horsfield, Trans. Linn. soc. London, 1821, **13**, p. 190. Java). Java (Sumatra?).

IXOBRYCHUS SINENSIS ASTROLOGUS Wetmore (Proc. Biol. soc. Washington, 1918, **31**, p. 83. Luzon). Philippine Islands.

IXOBRYCHUS SINENSIS BRYANI (Seale) (*Ardetta bryani* Seale, Occas. papers Bernice Pauahi Bishop mus., 1901, **1**, no. 3, p. 27 Guam). Guam, Marianne Islands.

IXOBRYCHUS SINENSIS MOOREI Wetmore, *Supra*, p. 173, Uala, Middle Caroline Islands.

In the series examined other localities than those listed above are represented only by birds in immature plumage whose subspecific identification is somewhat uncertain until additional material is available. There are without question several other races present, so that the forms listed are given merely to render the treatment accorded the Caroline Island bird intelligible. It may be noted that another name is available for a form of this bittern as the bird from the Andaman Islands has been described by Hume (Stray feathers, 1873, **1**, p. 309) as (*Ardetta*) *pulehra*, but no specimens from that locality have been available in the present study.

ANATIDAE.

10. *ANAS SUPERCILIOSA PELEWENSIS* Hartlaub and Finsch.

Anas superciliosa Gmel. var. *pelewensis* Hartlaub and Finsch, Proc. Zool. soc. London, 1872, p. 108. (Pelew Islands).

Two specimens were taken, in the Tonga Islands, a male at Nomuka, 2 December, 1899, and an adult bird with sex not marked, at Vavau, 5 December, 1899. The type-locality of *Anas superciliosa* Gmelin is New Zealand and the bird from Australia which is distinctly larger than the typical form has been separated by Mathews (Austr. avian record, 1912, **1**, p. 33) as *A. s. rogersi*. Polynesian birds (from Upolu, Samoan Islands, Nomuka, and Vavau, Tonga Islands, and Tahiti) are similar in size to the New Zealand form, but differ from both *A. s. superciliosa* and *A. s. rogersi* in being distinctly darker below and in having the throat, band on side of head, and superciliary stripe pinkish buff. In *superciliosa* proper and in *rogersi* the buff on these areas is decidedly less rufescent. Measurements of the two specimens in the present collection are as follows:—

No.	Sex	Locality	Wing	Tail	Culmen	Tarsus
U. S. N. M. 212,167	♂	Nomuka, Tonga Islands	217.5	75.2	48.0	43.0
" 212,168	?	Vavau, " "	240.0	—	42.6	44.5

These are placed with some reserve under *pelewensis*, (no specimens of which are available) as in general they agree with the original description of that form.

PHASIANIDAE.

11. GALLUS GALLUS (Linné).

Phasianus gallus Linné, Syst. nat., ed. 10, 1758, 1, p. 158. (India orientali).

An adult male in full plumage was collected on Nukuhiva in the Marquesas Islands, 16 September. This bird is somewhat larger than birds from Siam and elsewhere in the proper range of *G. gallus*, and has larger feet and heavier tarsi than in the average specimen from other localities. Peale (U. S. explor. exped., 1848, 8, p. 179) found the Jungle Fowl wild on the island of Tahiti, and collected several specimens. He called attention to the fact that his birds were "a shade lighter in colour, somewhat larger, with broader pendant feathers in the tail, and larger comb which is entire on the hind part," and gave figures illustrating the heads of birds from Tahiti and Malacca. Dr. Richmond has called my attention to the fact that Hartlaub (Journ. für ornith., 1854, p. 169) named this bird of Peale's *Gallus tahitiensis*, basing the name on Peale's figure and description. This name, changed to *Gallus tahiticus*, was used by Cassin (U. S. explor. exped., 1858, 8, p. 290) who remarks that "In the collection of the expedition we find a well-characterized specimen from Tahiti." From Dr. Richmond it is learned that Baird was unable to find this bird when making a manuscript list of the birds in the Smithsonian Museum, between 1860 and 1865, as he wrote "not found" at the top of the sheet devoted to this specimen.

The specimen examined from Nukuhiva has the back of the comb entire, but this seems to be a character of little weight as wild birds from elsewhere agree with it in this point; it has the following measurements:—wing 236; tail 206; culmen (from comb) 18.2; tarsus 89.3; middle toe with claw 68.5.

PERDICIDAE.

12. EXCALFACTORIA CHINENSIS LINEATA (Scopoli).

Oriolus lineatus Scopoli, Deliciae florae et faunae Insubricae, 1786, pt. 2, p. 87. (Luzon).

A male was collected at Guam, 24 February, 1900. Seale (Occas.

papers Bernice Pauahi Bishop mus., 1901, 1, no. 3, p. 37) states that this quail was introduced into Guam from Manila in 1894 by Captain Pedro Duarty of the Spanish Army.

RALLIDAE.

13. GALLINULA CHLOROPUS (Linné).

Fulica chloropus Linné, Syst. nat., ed. 10, 1758, 1, p. 152. (England).¹

An adult female was collected at Guam, 24 February, 1900. This bird has the following measurements:—

No.	Wing	Tail	Tarsus
U. S. N. M. 212,180	158.0	62.5	48.0

The material at hand representing this species from localities outside the United States is too scanty to permit satisfactory study of subspecies at present, so that this specimen is simply catalogued as above without attempt to show its subspecific relationships.

CHARADRIIDAE.

14. PLUVIALIS DOMINICUS FULVUS (Gmelin).

Charadrius fulvus Gmelin, Syst. nat., 1789, 1. pt. 2; p. 687. (Tahiti).

Eighteen specimens of the Eastern or Pacific golden plover were secured from the following localities:—Makatea, 6 October; Tikei, 9 October; Makemo, 20 October, (Paumotu Islands); Vavau, (Tonga Islands) 4 December; and Arhno Atoll, 25 January (Marshall Islands); Tarawa, 3 January; Funafuti (Ellice Islands) 24 December; Rongelab, 18 January, and Taritari, 6 January (Gilbert Islands); and Uala (Middle Carolines) 16 February. A female from Tikei has many black feathers on the under surface. A male from Makemo is less strongly marked with black. Others are all in full winter plumage.

ARENARIIDAE.

15. ARENARIA INTERPRES OAHUENSIS (Bloxam).

Tringa oahuensis Bloxam, Byron's Voy. Blonde to the Sandwich Islands, 1826, p. 251. (Sandwich Islands).

Eleven specimens obtained were collected as follows:—One female

¹ Hartert, Nov. zool., 1902, 9, p. 424.

and one specimen without sex, Funafuti, Ellice Islands, 24 December, 1899; two males and one female, Tarawa, Gilbert Islands, 3 January, 1900; a male and a female, Taritari, Gilbert Islands, 6 January, 1900; a male, Jaluit, Marshall Islands, 10 January, a male and an unsexed specimen, Rongelab, Marshall Islands, 18 January, and a female at Uala in the Middle Carolines on 16 February. All of these birds are in full winter plumage. Comparison of a small series of European birds shows that the Pacific turnstone when in breeding plumage differs in having the chestnut areas of the back slightly darker.

SCOLOPACIDAE.

16. PHAEOPUS PHAEOPUS VARIEGATUS (Scopoli).

Tantalus variegatus Scopoli, *Deliciae florae et faunae Insubricae*, 1786, pt. 2, p. 92. (Luzon).

A male was collected at Guam in the Ladrone Islands, 24 February, 1900.

Mathews (*Birds of Australia*, 1913, 3, pt. 2, p. 168-169, 175) states that the species included in *Phaeopus* differ from the three species allotted to true *Numenius* (*N. arquata*, *cyranopus*, and *americanus*) in having the bill shorter than one half the wing, shorter than the tail, shorter than the tarsus and middle toe together, the tail longer than the tarsus and middle toe, and the middle toe more than half the tarsus. Careful comparison of all of the species involved shows that *Numenius* differs structurally from *Phaeopus* only in having the bill longer than the tarsus with middle toe, and longer than the tail. In *Phaeopus* the bill is shorter than the tarsus with the middle toe, and equal to or shorter than the tail. Though in most *Numenius* the bill is longer than half the wing, in some of the adult specimens of all three species included here the bill is less than one half the wing, as it is in all the forms belonging under *Phaeopus*. Though the tail is shorter than the tarsus with middle toe in all three species referred to *Numenius*, it is also shorter in *Phaeopus tahitiensis*, though longer in all the other species of *Phaeopus*. The length of the middle toe compared with the length of tarsus is found to be more in *Phaeopus* but variable in *Numenius*, so that it has no value as a generic character. The valid structural differences between the two genera may be summed up as follows:—

- a. Bill longer than tarsus with middle toe, longer than tail.

Numenius.

aa. Bill shorter than tarsus with middle toe, equal to or shorter than tail.....*Phaeopus*.

The species of *Numenius* are larger than those of *Phaeopus*, but there is no pronounced gap between the two groups, as *P. tahitiensis* and *P. hudsonicus* form intermediate steps between the larger and smaller curlews.

17. PHAEOPUS TAHITIENSIS (Gmelin).

Scolopax tahitiensis Gmelin, Syst. nat., 1789, 1, pt. 2, p. 656. (Tahiti).

Ten specimens of this fine curlew were collected as follows:—Makatea, 6 October, and Makemo, 22 October, Paumotu Islands; Taritari, Gilbert Islands, 6 January; and Rongelab, Marshall Islands, 18 January. Two males and two females were taken at both of the last two localities. Two birds from the Paumotu are in rather worn plumage. January specimens from Taritari and Rongelab have molted and are in fresh plumage save for one bird (a female) from Rongelab. In it the wings and tail show much wear. One male from the same locality has a strong wash of rufous on the neck and upper breast. In one male and one female from Taritari the dark markings of the throat and upper breast are nearly obsolete.

18. HETERACTITIS INCANUS (Gmelin).

Scolopax incanus Gmelin, Syst. nat., 1789, 1, pt. 2, p. 658. (Eimeo and Palmerston Islands).

Nine specimens in the collection were taken at Nukuhiva, Marquesas Islands, 16 September; Rangiroa, 21 September, and Makemo, 20 October, Paumotu Islands; Funafuti, Ellice Islands, 24 December; Tarawa, 3 January, and Taritari, 6 January, Gilbert Islands; and Kusaie, Eastern Carolines, 9 February. A female taken at Rangiroa, Paumotu Islands, 21 September, still retains a part of the barred adult plumage on the under parts. The other specimens are in winter plumage. This species seems to range in winter across most of Polynesia and the bird secured at Kusaie marks a point near its westward limit. In the present collection it was replaced at Uala by the allied *H. brevipes*.

19. HETERACTITIS BREVIPES (Vieillot).

Totanus brevipes Vieillot, Nov. dict. hist. nat., 1816, 6, p. 410. (Timor).

One male was taken at Uala in the Middle Carolines, 16 February, 1900. Mathews (Birds of Australia, 1913, 3, pt. 3, p. 209) considers *Heteractitis brevipes* a form of *H. incanus*, but the differences characterizing it seem so constant as to establish it as a full species. Examination of a considerable series of tattlers in the U. S. N. M. collection reveals no intergradation and all specimens examined could be determined as either *H. incanus* or *H. brevipes* at a glance. The differences between the two have been well set forth by Dr. Stejneger (Bull. 29 U. S. N. M., 1885, p. 132).

20. LIMOSA LAPPONICA BAUERI (Naumann).

Limosa baueri Naumann, Vögel Deutschl., 1836, 8, p. 429. (Australia).

A female collected on Funafuti 24 December, 1899, constitutes, apparently, the first record of the bird in the Ellice Islands. Mathews (Birds of Australia, 1913, 3, pt. 2, p. 191) has divided the genus *Limosa*, as at present recognized, into two groups, proposing the name *Vetola* for *Limosa lapponica*, a genus which, if recognized, must also include *Limosa haemastica* and *L. fedoa*. He restricts *Limosa* to the single species *Limosa limosa*, and in his diagnosis gives the following as distinguishing *Vetola* from it: "the bill is proportionately shorter and more slender and distinctly more upturned; the groove on the upper mandible becomes obsolete at about three-quarters the length of the culmen owing to the strong vertical compression of the upper mandible, the groove on the lower mandible persists however as in *Limosa*. The legs are short, the exposed tibia being less than the length of the middle toe, the metatarsus is less than twice the middle toe and also less than one-third the length of the wing, the scutellation of the front of the metatarsus becomes irregular and broken up into hexagonal scales towards the tibio-tarsal joint, whereas in *Limosa* the scutellation is quite regular. The middle claw is normal, untoothed and short, being one-fourth, or less, the length of the middle toe."

Examination of a series of specimens of the four species of godwits included under the genus *Limosa* (*sensu latu*) fails to substantiate the

validity of all of the differences outlined by Mr. Mathews, which apparently are based only on *Limosa limosa* and *L. lapponica*. His alleged differences will be taken up and considered in turn as he has given them. The bill in the species *limosa* is longer than in *haemastica* and *lapponica*, but shorter than in *fedoa*. In *limosa* the bill is more slender and less robust than it is in *fedoa*, while it is nearly straight in *limosa*, slightly upturned at the tip in *lapponica*, *haemastica*, and *fedoa*. The groove on the upper mandible varies slightly in length in all four species, but shows no specific differences in its development. With regard to the legs *limosa* has the lower extremities relatively slightly longer and somewhat more slender than in the other three species under discussion. The tarsus in *fedoa* is as long as it is in *limosa*, but the leg in the former is heavier and more bulky, and when compared with the wing is relatively slightly shorter than it is in *limosa*. The length of the crus when compared with the middle toe without the claw may be more or less as it varies individually. The measurement of the tarsus compared with that of the middle toe is also a variable factor, and may be more or less than twice the middle toe without the claw, depending upon the condition of the individual specimen. The length of the tarsus varies also when compared with the length of the wing according to the specimen in hand, and may equal more or less than one third of the wing, irrespective of species.

The scutellation of the front of the tarsus shows no constant difference in the four species under consideration. In general the scutes are transverse on the lower tarsus, and divided or broken toward the tibia.

The distance that the broken scutes extend down the front of the tarsus varies individually in all the species, and in addition there is a tendency for single scutes on the front of the tarsus below the area to become broken or divided. The development of the claw of the middle toe is also a variable character in spite of what has been said to the contrary. It is usually more slender in *limosa* than in the others, and seems always to be slightly more elongate in that species; but may be produced also and even pectinated in *haemastica* and *fedoa*, while the outer margin is often thin and distinctly crenulated in *lapponica*, with pectinate divisions indicated in some specimens.

To sum up the discussion as given above the valid differences between these proposed genera are apparently as follows:—

- a. Legs relatively slightly longer, more slender; toes relatively slightly more slender; bill nearly straight, not distinctly upturned at distal end, somewhat flattened near tip. *Limosa*.

- aa. Legs relatively slightly shorter, somewhat heavier; toes relatively slightly stronger; bill slightly upturned at distal end, decidedly flattened for distal third (sometimes for slightly more).

Vetola.

After careful consideration and reëxamination of a series of the four species these distinctions appear to be too slight and too inconstant to merit recognition as of generic value. The genus *Limosa* is used therefore in the present connection as the proper one for *Limosa lapponica baueri*.

21. PISOBIA ACUMINATA (Horsfield).

Totanus acuminatus Horsfield, Trans. Linn. soc. London, 1821, **13**, p. 192. (Java).

Three specimens were secured at Taritari in the Gilbert Islands on 6 January, 1900. The species does not appear to have been recorded previously from this group.

22. AECHMORHYNCHUS PARVIROSTRIS (Peale).

Tringa parvirostris Peale, U. S. explor. exped., 1848, **8**, p. 235. (Dog or Honden, and Raraka Islands, Paumotu Group).

An adult female was shot on Whitsunday Atoll, Paumotu Islands, 31 October, 1899. *Tringa parvirostris* of Peale has been referred to *Tringa cancellata* Gmelin (Syst. nat., 1789, **1**, pt. 2, p. 675) which is based on the Barred phalarope of Latham. In Latham's original description (Gen. syn. birds, 1785, **3**, pt. 1, p. 274) it is stated that the bird described was in the collection of Sir Joseph Banks and that it had come from Christmas Island. Latham remarks that the bill was one inch long and that the under parts were white barred with dusky. There are in the U. S. N. M. three of the five specimens collected by Peale on Dog (or Honden) and Raraka Islands. On examining these and the bird secured on Whitsunday Atoll it is found that in the largest the bill is only 18 mm. long, and that in all the throat and abdomen are plain and unmarked. The birds secured by Peale are much stained and discolored, but in the fresh specimen taken by Dr. Townsend the under parts have a distinct buffy tinge. It appears, therefore, that Latham's Barred phalarope should be referred to some other species than the present one. Dr. T. H. Streets, U. S. N.,

who made a collection of birds on Christmas Island in the Fanning Group in 1874 (Bull. 7 U. S. N. M., 1877) did not record *Aechmorhynchus parvirostris*, and Christmas Island is two thousand miles from the nearest point at which that species is known at present.

The female shot on Whitsunday Atoll is distinctly larger than the specimens collected by Peale. The bill is longer, and the toes are noticeable for their length. As Peale's specimens are more or less stained and yellowed there can be no direct comparison in color and as none of his specimens have the sex indicated on the labels it is probable that these differences in size may be merely sexual characters.

It is possible that *Aechmorhynchus parvirostris* is an ancient species now on the verge of extinction. The bird collected on Whitsunday Atoll has three white edgings on the scapulars of the left side, and one of Peale's specimens (U. S. N. M. 15,721) possesses an extra digit with two phalanges and a small claw, growing from the base of the second phalanx of the fourth toe on the left foot. These abnormalities may mark degeneration due to inbreeding, or declining virility in the stock.

LARIDAE.

23. *ANOÛS STOLIDUS PILEATUS* (Scopoli).

Sterna pileata Scopoli, *Deliciae florae et faunae Insulariae*, 1786, pt. 2, p. 92. (Philippines).

Four specimens, all adult males, were collected as follows:—Kusaie, Eastern Caroline Islands, one, 8 February, 1900; Funafuti, Ellice Islands, one, 24 December, 1899; Makemo, 22 October, 1899, and Makatea, 6 October, 1899, both in the Paumotu Islands. Mathews (Birds of Australia, 1912, 2, pt. 4, p. 411) assigns the name *Anoüs s. unicolor* (Nordmann) to birds from the Society and Paumotu Islands "and other South Pacific groups." He remarks only that this proposed form is larger than any of the others. As it is found that birds from the Straits of Malacca and the China Sea are fully as large, this name is rejected and the specimens are placed under *A. s. pileatus* (Scopoli). It may be remarked also that specimens of *A. s. galapagensis* Sharpe, a form distinguished by its darker coloration, have the wing as long as birds from the Paumotu Islands. Measurements of the specimens in the present collection are as follows:—

No.	Sex	Locality	Wing	Tail	Culmen	Tarsus
U. S. N. M. 212,148	♂	Kusaie, Eastern Carolines	8 Feb., 1900	277.0	158.2	42.0 26.0
" 212,147	♂	Funafuti, Ellice Islands	24 Dec., 1899	267.0	153.0	40.0 23.0
" 212,146	♂	Makemo, Paumotu Islands	22 Oct., 1899	284.0	170.0	41.5 25.0
" 212,145	♂	Makatea, Paumotu Islands	8 Oct., 1899	285.0	166.0	43.0 24.0

24. MEGALOPTERUS MELANOGENYS (G. R. Gray).

Anous melanogenys Gray, Gen. birds, 1846, **3**, p. 658, pl. 182. (No type-locality assigned).

Three specimens come from the Paumotu Islands, a male taken at Rangiroa, 21 September, 1899, a female at Makemo, 22 October, 1899, and a third specimen that bears neither locality nor date. These birds are all fully adult. From lack of sufficient material for comparison it is not practicable at present to designate to what subspecies the birds from the Low Archipelago belong. Mathews (Nov. zool., 1911, **18**, p. 4) finds that *Megalopterus* Boie (Isis, 1826, p. 980) pre-occupies *Micranous* Saunders (Bull. 23 Brit. ornith. club, 1895, p. 19). Mathews (Birds of Australia, 1912, **2**, pt. 4, p. 420) states further that the name *Anous minutus* Boie (Isis, 1844, p. 188) "is applicable to this species only, the bill characters being diagnostic." As Boie, in describing the bill, remarks simply "Schnabel und Füsse schwarz, ersterer sehr schwach," his statement might apply to either the present species or to *M. tenuirostris*. As the name cannot be fixed it must be abandoned. The next available name is *Anous melanogenys* G. R. Gray (Gen. birds, Jan., 1846, **3**, p. 658). This pre-occupies the name *Anous leucocapillus* Gould (Proc. Zool. soc. London, 1845, [Feby., 1846], p. 103) as this designation although in the volume of the Proceedings of the Zoological Society for 1845 was not actually published until February, 1846. The species therefore will stand as *Megalopterus melanogenys*.

25. PROCELSTERNA CERULEA (F. D. Bennett).

Sterna cerulea Bennett, Narrative whaling voyage, 1840, **2**, p. 248. ("Christmas Island and other low coral formations of the Pacific").

One specimen was taken, an adult female from Rangiroa, Paumotu

Islands, collected 22 September, 1899. From lack of material for comparison it is not possible to assign a subspecific name to this bird. According to Mathews (Birds of Australia, 1912, 2, pt. 4, p. 431), specimens from the Paumotu, Marquesas, and Society Islands should be called *Procelsterna cerulea tertirostris* (Lafresnaye).

26. GYGIS ALBA PACIFICA (Lesson).

Sterna pacifica Lesson, Ann. sci. nat., 1825, 4, p. 101. (Society Islands, Paumotu Islands, and Bora Bora).

Three specimens were taken, a female at Tekokoto, 26 October, 1899, and two males at Akiaki, Paumotu Islands, 30 October, 1899.

Measurements of the specimens follow:—

No.	Sex	Locality	Wing	Tail	Culmen	Tarsus
M. C. Z. 81,929						
(U. S. N. M. 212,152)	♂	Akiaki, Paumotu Islands	30 Oct., 1899	249.0	124.0	40.2 13.8
" 212,153	♂	Akiaki, Paumotu Islands	30 Oct., 1899	243.0	127.5	41.0 13.0
" 212,154	♀	Tekokoto, Paumotu Islands	26 Oct., 1899	243.0	117.0	40.0 13.5

27. GYGIS MICRORHYNCHA Saunders.

Gygis microrhyncha Saunders, Proc. Zool. soc. London, 1876, p. 668. (Marquesas Group).

Four specimens were collected of which three, a male, a female, and an alcoholic specimen whose sex is not known at present were taken at Nukuhiva, Marquesas Islands, on 16 September, 1899. The fourth is a mummy that probably should bear the same date. These birds differ from the original description in having the shafts of the rectrices blackish (not entirely white). In addition the second rectrix is the longest instead of the third as is stated by Saunders. The black eye ring is more distinct than in specimens of *Gygis alba*.

28. STERNA LUNATA Peale.

Sterna lunata Peale, U. S. explor. Exped., 1848, 8, p. 277. (Vincennes Island, Paumotu Group).

One specimen, an immature bird, was collected at Rangiroa, Paumotu Islands, 23 September, 1899.

29. STERNA SUMATRANA Raffles.

Sterna sumatrana Raffles, Trans. Linn. soc. London, 1821, **13**, p. 329.
(Sumatra).

One specimen, a young bird not yet grown, in juvenal plumage was taken at Arhno Atoll in the Marshall Islands, 26 January, 1900. Mathews (Birds of Australia, 1912, **2**, pt. 4, p. 372) gives two forms under this species but seems uncertain as to the status of birds from Polynesia as he says "birds from Fiji, Pelew Islands, and Phoenix Island do not seem easily referable to the North-east Australian form." The latter he has described as *Sterna sumatrana kemp*i (Nov. zool., 1912, **18**, p. 210) with Torres Strait as the type-locality. The specimen in hand is too immature to permit satisfactory comparison.

30. THALASSEUS BERGII RECTIROSTRIS (Peale).

Sterna rectirostris Peale, U. S. explor. exped., 1848, **8**, p. 281, pl. 75, fig. 2.
(Feejee Islands).

Three specimens were taken at Makemo in the Paumotu Islands, a female 22 October, and two males 23 October, 1899. These birds are typical of this subspecies and differ from *T. b. pelecanoides* (King) in being slightly paler above. The differences noted are slight but seem strong enough to uphold the separation of this form.

TRERONIDAE.

31. PTILOPUS CORALENSIS (Peale).

Ptilinopus coralensis Peale, U. S. explor. exped., 1848, **8**, p. 190. (Carlschoff or Aratica Island).

There are fourteen specimens of this fruit pigeon in the collection taken in the Paumotu Islands at the following localities:— Makemo, 20 October; Niau, 7 October; Fakarava, 11 October and Makatea, 26 September and 6 October. The type of this species came from Carlschoff or Aratica Island, and the specimens listed above give the first definite records known for other islands, though Peale remarks that the species was found on many of the low coral islets of the

Paumotu Group. The birds from Makatea have the light edgings of the secondaries paler than specimens from Niau, Fakarava, and Makemo, but are otherwise the same. The type-specimen of *Ptilinopus coralensis* Peale was redescribed by Salvadori (Cat. birds Brit. mus., 1893, 21, p. 105) as *Ptilopus smithsonianus*, as he found that it did not agree in color with the plate as given by Peale. Peale's type was a mounted bird originally, though now remade as a skin, and the differences noted by Salvadori seem due to long exposure to dust and light. *Ptilopus smithsonianus* will stand as a direct synonym of *P. coralensis* with the same type-specimen extant for both (see Ogilvie-Grant, Ibis, 1913, p. 349).

32. PTILOPUS PEROUSHI (Peale).

Ptilinopus perousii Peale, U. S. explor. exped., 1848, 8, p. 195. (Upolu, Samoan Islands).

Five specimens of this handsome pigeon were collected at Tongatabu in the Tonga Islands on 30 November. One other has the locality uncertain but probably came from this same island. Three males in a series of four have an ochraceous orange band across the breast, while in the fourth this band is barely indicated. One female has the shorter under tail coverts tipped with red and their bases and the longer feathers yellow. Another (place of capture somewhat uncertain) has the under tail coverts entirely yellow.

33. PTILOPUS DUPETITHOUARSII (Neboux).

Columbia dupetithousarsii Neboux, Rev. zool., 1840, p. 289. (Christina Island, Marquesas Group).

Eight specimens, six of them males, were taken at Nukuhiva, Marquesas Islands, on 16 September. The males vary in the amount of reddish orange on the underparts. One adult female resembles the males but has less of this bright color below than the more highly colored specimens. An immature female has the reddish orange patch below as in adults while the crown cap is grayer and much obscured posteriorly by greenish tips on the feathers. The bill in this species is dusky, the feet brownish.

34. *PTILOPUS PORPHYRACEUS* (Temminck).

Columba porphyracea Temminck, Trans. Linn. soc., London, 1821, **13**, p. 130.
(Tongatabu and Ulieta).

Eleven specimens were collected at the following localities:— Niue, 25 November; Eua, 28 November; Tongatabu, 30 November; Nomuka, 2 December; and Vavau, 4 December, all in the Tonga Islands; and Kambara, 7 December in the Fiji Islands. The species does not seem to have been recorded from Kambara and Nomuka before. The bird from the Fijis has been called *Ptilopus porphyraceus clementinae* (Jacquinot and Pucheran) (Wiglesworth, Aves Polynesiae, 1891, p. 50). It is slightly paler on the breast and throat than the average in the series but in this respect is equalled by one bird from Eua. The under tail coverts are yellower also but other specimens from the Tonga Islands resemble it closely. A bird in immature plumage from Eua has the under tail coverts entirely yellow with no orange at all, so that the depth and extent of the orange color in these feathers seems to be dependent upon age. No females are represented in the collection so that no comparison is possible between the two sexes in regard to this character. It is worthy of note that two males, apparently adult, from Niue have the under tail coverts entirely deep yellow.

In an immature bird from Eua the aster-purple crown of the adult is indicated on the forehead by a few new feathers at the base of the cere. Elsewhere the crown is green (between light hellebore and light elm-green) like the back. All of the wing coverts, tertials, and scapulars are tipped with yellow. The primaries are tipped with white, the secondaries with white and margined with yellowish, and there are obscure yellow tips on the feathers of the back forming slender cross-bars. The terminal tail band is obsolete on the median pair of rectrices. The under tail coverts, abdomen, and a patch either side of the rump are yellow, there is an obscure yellowish patch on the middle of the abdomen and the feathers of the lower throat and breast are tipped with yellow. There is no trace of a dark band on the lower breast, and the concealed blue spots found in the adult near the tips of tertials and scapulars are faintly indicated on some feathers in these areas by obscure spots of slightly brighter green.

35. *PTILOPUS PURPURATUS* (Gmelin).

Columba purpurata Gmelin, Syst. nat., 1789, 1, pt. 2, p. 784. (In insulis australis intra tropicos inclusis).

One specimen was collected at Tahiti in the Society Islands on 13 November, and two more were secured the following day. One of these birds has a strong coppery reflection on the rectrices as in *P. coralensis*. This color is arranged in narrow bands. The feet in all three specimens are blackish.

36. *PTILOPUS HERNSHEIMI* Finsch.

Ptilopus hernsheimi Finsch, Journ. für ornith., 1880, p. 303. (Kusaie, Eastern Carolines).

A male, a female, two immature birds, and two mummies (formerly preserved as alcoholic specimens) are in the collection from Kusaie, 8 and 9 February. In color the female is similar to the male save that there is less of deep orange color on the longer under tail coverts. The other sexual color differences indicated by Dr. Finsch in his original description are not evident. The two immature birds differ from the adults in having the crown-cap barely indicated on the forehead. In addition the feathers of back, rump, wing coverts, and under parts are tipped lightly with pale yellow, the secondaries are tipped with yellowish white, the primaries are pointed with white and the terminal band on the rectrices is much narrower.

Measurements of the birds with sex indicated are as follows:—

No.	Sex	Wing	Tail	Exposed Culmen	Tarsus
U. S. N. M. 212,294	♂ adult	130.0	75.0	13.0	24.5
" 212,295	♂ im.	125.5	67.0	14.0	23.0
" 212,293	♀ adult	127.0	73.0	12.5	22.5

37. *PTILOPUS PONAPENSIS* (Finsch).

Ptilinopus ponapensis Finsch, Proc. Zool. soc. London, 1877, p. 779. (Ponapé, Caroline Islands).

Four males, one female, and another specimen, a mummy, with sex not marked, were secured on the Island of Uala in the Middle Caro-

lines (Truk Group) on 16 February. These birds have a spot in front of the eye that extends back as a narrow superciliary stripe, and the middle of the throat and chin distinctly yellow, characters that are not mentioned by Dr. Finsch in his original description, nor by Count Salvadori in the British museum catalogue (1893, **21**, p. 93). A young male in juvenal plumage from Ponapé has these same markings indicated, so that there are no differences evident in the specimens at hand. Fully adult birds from Ponapé are not available for comparison. In these yellow markings *P. ponapensis* resembles *hernsheimi* from the Eastern Carolines.

Measurements of the specimens with the sex indicated follow: —

No.	Sex	Wing	Tail	Exposed Culmen	Tarsus
U. S. N. M. 212,287	♂	130.0	74.0	15.0	22.5
" 212,288	♂	133.5	73.0	13.5	24.0
M. C. Z. 81,934 (" 212,289)	♂	137.0	76.0	14.0	24.0
M. C. Z. 81,935 (" 212,290)	♂	131.5	73.5	14.0	24.0
" 212,291	♀	126.0	68.5	14.5	22.0

38. GLOBICERA AURORAE (Peale).

Carpophaga aurorae Peale, U. S. explor. exped., 1848, **8**, p. 201. (Aurora or Makatea Island).

A female was collected on Makatea Island 6 October, 1899. This bird is molting, and has not yet cast the six inner pairs of secondaries nor the second pair of rectrices. These old feathers are dull brown in color with a very slight gloss of blue, so that they are much duller than the bright new feathers. From a study of skins (including the types) in the U. S. N. M. collection it appears that *Globicera wilkesii* (Peale) (U. S. explor. exped., 1848, **8**, p. 203) described from Tahiti is a synonym of *Globicera aurorae*, as the differences between these supposed species are merely those of age (and perhaps of sex). *G. wilkesii* was said to be darker in color than *G. aurorae* and to have a smaller knob on the cere. In addition Peale ascribed to it twelve rectrices instead of fourteen but this difference in the number of tail feathers is due to an imperfection in the specimen that he chose for type. As regards color, specimens from Makatea are found that are as dark as those from Tahiti in corresponding plumage and the lighter birds may occur in either locality. The size and shape of the cere

varies in individuals, regardless of locality, and may be seasonal in its growth, or may differ in the sexes. No differences in measurements are apparent, but only a few of the specimens examined have the sex given, and in part of those there is some doubt as to the correctness of the determination. There is apparently only one fully adult in the series of nine available, and this bird is sexed as a male. Peale remarks (*Opus cit.*, p. 204) that a specimen of *G. wilkesii* was obtained by Captain Wilkes on Aurora (Makatea) Island, and this specimen is still in the U. S. N. M.

39. GLOBICERA PACIFICA (Gmelin).

Columba pacifica Gmelin, Syst. nat., 1789, 1, pt. 2, p. 777. (Friendly Islands).

A male and a female were secured on Funafuti in the Ellice Islands, 25 December, 1899. A species of pigeon was reported from this atoll for many years, and the fact that it belonged to this form was finally established by Mr. A. J. North (Rec. Austr. mus., 1898, 3, p. 85).

40. GLOBICERA OCEANICA OCEANICA (Desmarest).

Columba oceanica Desmarest, Dict. sci. nat., 1826, 40, p. 316. (Ualan - Kusaie).

An immature male was taken 8 February, and a female, 9 February, at Kusaie, the type-locality. The male is apparently fully grown but shows differences in color from the female that seem to be due to immaturity. The throat, malar region, and space behind the eye are more extensively white, and the feathers of the breast have faintly indicated paler tips. The lower breast is paler than the upper breast and the rufous of the lower breast is restricted by this paler color.

Measurements of these two specimens are as follows: —

No.	Sex	Wing	Tail	Culmen	
				from Cere	Tarsus
U. S. N. M. 212,242	♀ adult	216.0	139.0	17.0	28.5
" 212,243	♂ im.	208.0	128.0	17.5	31.0

41. GLOBICERA OCEANICA TOWNSENDI, subsp. nov.

Characters.—Similar to *Globicera oceanica oceanica* (Desmarest) from Kusaie, Caroline Islands, but darker on upper breast, foreneck,

hindneck, and upper back; no whitish line indicated on lower eyelid beneath eye; and under tail coverts paler.

Type.—U. S. N. M. 212,240. Adult female. Polynesia: Eastern Caroline Islands; Ponapé, 12 February, 1900. H. F. Moore.

Description.—Forehead, at base of bill white; crown, nape, hindneck, and upper scapular region between deep and dark neutral gray, changing to neutral gray immediately behind the white on the forehead; wing coverts, scapulars, back, rump, and upper tail coverts dull blackish green, the feathers iridescent, with darker green or very dark blue more or less distinctly indicated at the tips; primaries dull greenish black no. 2; visible portions of rectrices dull blackish green, the central pair with faintly indicated narrow darker crossbars; malar region, chin, and upper throat, whitish; side of head, throat, and sides of neck between deep and dark olive-gray; breast between mouse-gray and deep olive-gray; abdomen, tibiae, and under tail coverts russet; sides, flanks, and axillars dark neutral gray; bend of wing washed with rufous; bill and cere black; tarsus and toes brownish yellow, nails black (from dried skin).

Measurements.—Females (two specimens, no males seen) wing 221–223; tail 142.5–147; culmen (from cere) 17.5–18; tarsus 32–33.5.

Range.—Island of Ponapé.

Remarks.—Two adult females of this fine pigeon were collected on Ponapé, 11, 12 February, 1900. Both agree closely in color but one is slightly larger than the other. These two are distinctly darker than specimens from Kusaie and may be distinguished from them without difficulty. The type has the bend of the wing washed with rufous but this color is lacking in the second specimen.

LORIIDAE.

42. EOS RUBIGINOSA (Bonaparte).

Chalcopsitta rubiginosa Bonaparte, Conspec. gen. avium, 1850, 1, p. 3. ("ex insulis Barbay, et Guebe." Later attributed correctly to Ponapé. Cf. von Pelzeln, Novara exped. Vögel, 1865, p. 99).

Two males, two females, and two mummies (dried from alcohol) were collected at Ponapé in the Eastern Caroline Islands, 12 February. Males and females are alike in coloration and size. This parrot was supposed to be a native of Waigiou for many years until discovered on Ponapé ("Puynipet") by the NOVARA expedition.

43. VINI AUSTRALIS (Gmelin).

Psittacus australis Gmelin, Syst. nat., 1788, 1, pt. 1, p. 329. (Samoan Islands).

Three birds were secured at Niue or Savage Island, 25 November, and four were taken at Upolu in the Samoan Islands. The birds from the two localities appear identical in color and size. It is probable that these small parrots have been carried from island to island as cage-birds.

44. CHORIPHILUS PERUVIANUS (Müller).

Psittacus peruvianus Müller, Natursyst. Suppl., 1776, p. 80. ("Peru.")

Based on Buffon. Type-locality is here given as Tahiti, cf. Daubenton, Planches enlum., no. 455, fig. 2).

There are in the collection four skins of this small parrot from Rangiroa, Paumotu Islands, taken 21, 22, and 23 September, seven from Bora Bora, Society Islands, collected 17 November, and seven from Aitutaki, Cook Islands, secured 21 November. In addition five birds from Bora Bora were preserved as alcoholic specimens. The name *Psittacus taitianus* (Gmelin) (Syst. nat., 1788, 1, pt. 1, p. 329) has been commonly applied to this parrot with *Psittacus peruvianus* given as a synonym. As Müller's name antedates that used by Gmelin and as there is no ground for supposing that his bird is not this species *Psittacus peruvianus* must be accepted. Müller gives Peru as the type-locality which is obviously erroneous. The type-locality is hereby restricted to Tahiti.

Two male birds from Rangiroa are in immature plumage. In both the breast is blackish. In one a few white feathers show on the ear coverts and throat while in the other the cheeks and a spot on the breast are white. The dark immature bird from Tahiti has been described by Sparrman (Mus. Carlson., 1787, fasc. 2, no. 27, pl. 27) as *Psittacus cyaneus*. More recently Mr. Scott B. Wilson (Ibis, 1907, p. 379, pl. 8) has named a bird in this same dark plumage from Bora Bora in the Society Group, calling it *Coriphilus cyaneus*. Later (Ibis, 1907, p. 653) on learning of the previous use of *Psitticus cyaneus* by Sparrman, Wilson renamed his bird *Coriphilus cyaneescens*. On referring to his original description and the colored plate accompanying it there can be no question that this is an immature specimen of *C. peruvianus*.

The species does not seem to have been recorded from the Cook Islands before and though it is known from the Paumotu Islands apparently none have been collected previously on Rangiroa. Careful comparison of the series from the three localities represented reveals no differences in coloration but there are some slight differences evident in size. Two males from Aitutake average smaller than males from Bora Bora, Society Islands. Males from Rangiroa are likewise smaller than those from Bora Bora. From the present series however, it does not appear that these differences merit distinction by name.

Average measurements are as follows (in millimeters):—

<i>Sex</i>	<i>Locality</i>	<i>Wing</i>	<i>Tail</i>	<i>Culmen from Cere</i>	<i>Tarsus</i>
2 ♂♂	Aitutake	107.5	68.2	9.5	14.1
7 ♂♂	Bora Bora	114.6	70.5	10.1	15.8
4 ♂♂	Rangiroa	109.7	68.3	10.2	14.3

Females are represented from Aitutaki only. Four have the average wing measurement 104.9, tail 65.4, culmen from cere 9.4 and tarsus 14.6.

CUCULIDAE.

45. URODYNAMIS TAITENSIS TAITENSIS (Sparrrman).

Cuculus taitensis Sparrrman, Mus. Carlson., fasc. 2, 1787, **32**, pl. 32. (Tahiti).

An adult (sex not determined) was shot on Funafuti in the Ellice Group, 24 December. This cuckoo is said to be resident in both the Ellice and Gilbert Islands. In the latter group there are no other land birds, and in the Ellice Islands a pigeon is the only land bird known other than the cuckoo, so that there has been considerable speculation as to in what way this species practiced its parasitic habit of foisting its eggs upon other species for incubation and the rearing of its young. Concerning this the following observations by Mr. Swayne are of interest:—"In August last year I was at the Island of Niu, in the Ellice Group, and while walking through the island along with the local trader we passed a clump of 'buka' trees, in which, as is common throughout the Ellice Islands, there were numbers of the Noddies (*Anous stolidus*) nesting. I noticed that in one tree the birds were much disturbed and apparently frightened. The trader explained

that the birds were disturbed by a 'Hawk.' We remained some time watching, and I saw our friend the Cuckoo drive a Noddy out of the nest and take possession of it, while the old birds and apparent proprietors tried in vain to dislodge the intruder.***

"I do not doubt that the Cuckoo was about to lay.***

"Although I offered rewards to the natives on many islands, I never was able to get an egg of the Cuckoo. In the Gilberts the people say they have never seen eggs or young, and, as I told you, they hold the tradition that the female takes a portion of the covering of the young palm-leaf and flying up with it deposits it on a cloud, lays her egg on it, where it is hatched by the sun." North, Proc. Zool. soc. London, 1896, p. 934.

It would be strange indeed if this remarkable bird could survive under the care and feeding of the Noddy, but this seems more plausible than that its young should be able to thrive (in the Ellice Islands) upon the vegetable food given young pigeons for their sustenance. Certainly the former belief is the more credible.

ALCEDINIDAE.

46. SAUROPATIS MEDIOCRIS (Sharpe).

Halcyon mediocris Sharpe, Cat. birds Brit. mus., 1892, **17**, p. 260. (Ponapé).

A female was taken on Ponapé in the Eastern Caroline Islands, 12 February, 1900. In his original description Sharpe designates this bird as subspecies *b* of *S. cinnamomina* (Swainson) (though he uses a binomial name for it). The bird at hand differs from females of *S. cinnamomina* in having the under parts entirely white, the crown paler and the collar on the hind neck white instead of cinnamon. In addition the white collar is bordered behind by black and the back is more bluish. The differences are so great that *Sauropatis mediocris* seems (from the present material at least) to represent a full species.¹ *S. mediocris* agrees with the following species *S. sacra* in the form of its bill, and in having the tenth (outermost) primary shorter than the sixth and longer than the fifth.

¹ As has been pointed out by Seale (Occas. papers Bernice Pauahi Bishop mus., 1901, **1**, no. 3, p. 46) *Halcyon ruficularis* Sharpe (Cat. birds Brit. mus., 1892, **17**, p. 260) based on a skin received from the Zoological society of London, is the female of *Sauropatis cinnamomina* (Swainson).

47. SAUROPATIS SACRA SACRA (Gmelin).

Alcedo sacra Gmelin, Syst. nat., 1788, 1, pt. 1, p. 453. (Type-locality hereby restricted to Tongatabu Island).

One male was taken on the Island of Tongatabu, 30 November. There are two other birds, a male and a female from the island of Nomuka taken 2 December, that have been referred to this form but are not typical of it as they are slightly duller in color than the bird from Tongatabu, and in addition are considerably smaller. Measurements are as follows:—

No.	Sex	Locality	Wing	Tail	Culmen from Base
U. S. N. M. 212,341	♂	Tongatabu Id.	105.0	73.5	44.0
" 212,340	♂	Nomuka Island	97.0	68.5	43.0
" 212,339	♀	" "	101.0	72.5	43.5

The birds from Nomuka are in worn plumage, which might account in part for the shortness of wing and tail. The single bird from Tongatabu, however, has a large heavy bill that is noticeably stronger and broader at the base than in any other specimen in the various forms of this species examined. Females of *Sauropatis sacra* in general differ from males in having the superciliary stripe whiter, in being decidedly more greenish above, and in having little or no blue apparent in the blackish feathers on the anterior surface of the tibia. In addition females are the larger of the two sexes.

In treating the geographical forms of *Sauropatis sacra* it becomes necessary to restrict the typical subspecies. Therefore, I designate the island of Tongatabu, in the Tonga Islands, as the type-locality of *Sauropatis sacra sacra*. The *Alcedo sacra* of Gmelin was based upon Latham's sacred Kingfisher (Latham, Gen. syn. birds, 1782, 1, pt. 2, p. 621). Latham states that his bird had a blue band on the hind neck, in this agreeing with the forms found in the Tonga Islands. An island in this group therefore is selected as the type-locality for the typical form, as birds from the Fiji Islands have this band black or with only a trace of blue. The latter are to be known as *Sauropatis sacra vitiensis* (Peale) (U. S. explor. exped., 1848, 8, p. 156).

This species has the tenth (outermost) primary slightly shorter than the sixth and longer than the fifth, and so does not agree wholly with the figure of the wing of *Sauropatis sanctus* given by Mathews

(Austr. avian record, 1912, 1, p. 107) in recognizing the genus *Sauropatis* of Cabanis and Heine. In that species the tenth primary is longer than the seventh and in *Halcyon senegalensis*, which is also figured by Mathews, the tenth primary is considerably shorter than the fifth. In the form of its bill *Sauropatis sacra* agrees closely with *S. sanctus*.

48. *SAUROPATIS SACRA RABULATA*, subsp. nov.

Characters.—Similar to *Sauropatis sacra sacra* (Gmelin) but darker, less greenish above, especially on head and rump.

Type.—U. S. N. M. 212,343. Male. Polynesia: Tonga Islands; Eua, 28 November, 1899. C. H. Townsend.

Description.—Crown and collar on hind neck dusky greenish blue; back, scapulars, tertials, and inner secondaries chessylite-blue; rump near motmot-blue; lesser and middle wing coverts Blanc's blue, the feathers edged more or less with Mathews's blue; first primary, tips and inner webs of other primaries, and under side of rectrices dull black; greater wing coverts, outer webs of primaries (except the first) and upper side of rectrices dusky greenish blue; superciliary stripe white mixed with cinnamon-buff; behind the eye this stripe is entirely cinnamon-buff, is broadened and unites with its fellow from the opposite side; malar stripe, extending from gape to unite with blue stripe on hind neck, chessylite-blue, the feathers black underneath so that the two colors are mixed; lores and a narrow line under eye black; a very narrow line of chessylite-blue over eye; spot on lower eyelid, collar on hind neck, and entire under parts white; anterior side of tibia blackish, with capri-blue tips on a few feathers.

Measurements.—Males (two specimens), wing 100–101; tail 69–70; culmen from base 41–42.5; tarsus, 15–15.3.

Female (one specimen) wing 104, tail 73.5, culmen from base 44, tarsus 16.5.

Range.—Island of Eua, Tonga Group.

Remarks.—The superciliary stripe in fully adult birds is white (as is shown by a female specimen) so that the type is not quite in full plumage. Adults and young after their first molt seem to differ in no other way.

The *Aleedo sacra* of Gmelin (Syst. nat., 1788, 1, pt. 1, p. 453) is based upon the Sacred Kingfisher of Latham (Gen. syn. birds, 1782, 1, pt. 2, p. 621) who described the bird from the Leverian Museum.

In his original description Latham states that his bird has "under the blue beneath the eye, a narrow orange ferruginous stripe." This marking is not found in the present species; and Von Pelzeln (Ibis, 1873, p. 19) who has examined Latham's type says that this marking is not indicated save for a slight tinge of yellowish under the auricular region. Latham states that his Sacred kingfisher inhabited Otaheite and the other Society Islands, an obvious error, as the species is not known save from the Tonga and Fiji groups.

Four specimens (three skins and one bird in alcohol) upon which this form is based were taken at Eua, Tonga Islands, on 28 November.

49. *SAUROPATIS SACRA CELADA*, subsp. nov.

Characters.— Similar to *Sauropatis sacra sacra* (Gmelin) but lighter, more greenish above, especially on the crown; malar stripe with little or no black indicated save at its posterior margin.

Type.— U. S. N. M. 212,347. Male. Polynesia: Tonga Islands; Vavau, 4 December, 1899. C. H. Townsend.

Description.— Crown, band on hind neck, back, scapulars, and tertials capri-blue; upper tail coverts bremen-blue; first primary, tips and inner webs of other primaries, and under side of rectrices blackish; outer webs of primaries (save first), greater wing coverts, and upper side of rectrices dark chessylite-blue; lesser and middle wing coverts china-blue; superciliary stripe white, mixed more or less with ochraceous buff, the stripes from either side meeting on back of head; lores black mixed with white, the black glossed with blue; malar stripe Blanc's blue; spot on lower eyelid, and entire under parts white; anterior side of tibia Blanc's blue, the feathers blackish basally.

Measurements.— Males (three specimens), wing 101–102.5 (101.8); tail 70.5–73 (72.0); culmen from base 41–42 (41.6); tarsus 16–16.5 (16.1).

Female (one specimen), wing 106.0, tail 76.5, culmen from base 45, tarsus 17.

Range.— Island of Vavau, Tonga group.

Remarks.— Four specimens of this form were taken at Vavau, Tonga Islands, 4 December. One bird, a male, nearly adult, is somewhat darker than the other two but is distinguishable from *S. s. sacra*. All of the males have more or less of buffy in the superciliary stripe a character which as has been noted above seems to be an indication of immaturity in this species, though this buffy color is less in

amount in females than in males. The female specimen has no locality indicated on its label, but from its coloration is identified as belonging without doubt to this form.

50. HALCYON SACRA VITIENSIS (Peale).

Dacelo vitiensis Peale, U. S. explor. exped., 1848, 8, p. 156. (Venua-levu, Feejee Islands).

One female referred to this form was taken at Kambara in the Fiji Islands, 7 December. Birds examined from the Fiji Islands differ constantly from specimens in the Tonga Group in having the dark band on the hind neck black, or with only an admixture of blue. In Tonga Island birds this band is entirely blue. Fijian birds too appear to be constantly smaller. Measurements of the bird taken on Kambara are as follows:—

No.	Sex	Wing	Tail	Culmen from Base
U. S. N. M. 212,338,	♀	93.0	65.5	42.5

51. TODIRHAMPHUS RECURVIROSTRIS Lafresnaye.

Todiramphus recurvirostris Lafresnaye, Rev. zool., 1842, p. 134. ("in insulis Maris Australis").

A single bird (sex not marked) was taken at Upolu in the Samoan Islands.

52. TODIRHAMPHUS TUTUS (Gmelin).

Alcedo tuta Gmelin, Syst. nat., 1788, 1, pt. 1, p. 453. (Tahiti).

Five specimens were collected at Bora Bora in the Society Islands, 17 November. An immature male has the feathers of the upper breast buffy, with blackish cross bars forming a dark band across the breast. Three of the birds taken have the forehead white, while in the other two it is the same color as the crown, with white borders on the feathers. Immature birds are more greenish above than the adults.

Sharpe has stated (Hist. collections Brit. mus. Birds, 1906, p. 182) that the "Respected" and "Venerated" kingfishers described by

Latham (Gen. syn. birds, 1782, 1, pt. 2, p. 623, 624) upon which Gmelin (Syst. nat., 1788, 1, pt. 1, p. 453) founded his species *Alcedo tuta* and *A. venerata*, "seem to be the same species, and hence *Todirhamphus tutus*, Sharpe (nec. Gm.), Cat. birds, 17, p. 291, will require another name, which I propose should be *Todirhamphus wiglesworthi*, in memory of the young explorer who did such good work as the historian of the Pacific Avifauna." On turning to Latham's descriptions it is found that the diagnosis of the "Venerated" Kingfisher is readily applicable to specimens of *Todirhamphus veneratus* at hand. His note on a band of glossy green on the hind neck "at which place it inclines to white" is true, as in some individuals white markings occur on the feathers in this region. In his account of the "Respected" Kingfisher Latham says distinctly "over the eye a white streak" which is one of the prominent differences between *T. tutus* and *T. veneratus*. So that there is no question but the "Respected" and the "Venerated" Kingfishers of Latham refer to separate species. From this it appears that the name *Alcedo tuta* of Gmelin is valid and that *Todirhamphus wiglesworthi* Sharpe must be placed in the synonymy of this species.

53. TODIRHAMPHUS VENERATUS (Gmelin).

Alcedo venerata Gmelin, Syst. nat., 1788, 1, pt. 1, p. 453. (Said by Latham to come from Apia. As the bird does not occur there the type-locality is hereby stated to be Tahiti).

Five males and an immature female were secured at Tahiti, 3 October and 14 November, 1899. The immature bird has a broad brown band across the upper breast, and is brown with only a tinge of green above. The males all show a slight amount of brown on either side of the breast and in one a broken band is indicated by slender shaft streaks on the feathers of the upper breast.

MICROPODIDAE.

54. COLLOCALIA FRANCICA TOWNSENDI Oberholser.

Collocalia francica townsendi Oberholser, Proc. Acad. nat. sci. Philad., 1906, p. 197. (Eua, Tonga Islands).

Three specimens of this swift were secured in the Tonga Islands, one at Niue, 25 November, one (the type) at Eua 28 November, and one

at Vavau, 4 December. The bird from Niue has the tips of the breast feathers entirely worn away.

55. *COLLOCALIA THESPESIA* Oberholser.

Collocalia thespesia Oberholser, Proc. Acad. nat. sci. Philad., 1906, p. 195 (Tahiti).

The type of this species, a female, was collected at Tahiti, Society Islands, 14 November, 1899.

56. *COLLOCALIA OCISTA* Oberholser.

Collocalia ocista Oberholser, Proc. Acad. nat. Sci. Philad., p. 184. (Nukuhiva).

Two specimens (including the type) were secured at Nukuhiva, 16 September, and one at Tahiti, 13 November. The bird from Tahiti, a male, has the breast feathers much worn.

HIRUNDINIDAE.

57. *HYPUROLEPIS TAHITICA* (Gmelin).

Hirundo tahitica Gmelin, Syst. nat., 1789, 1, p. 2, p. 1016. (Tahiti).

Three were taken on Nomuka, Tonga Islands, 2 December. Only one of these, an adult female, has the sex indicated without question. The remaining two are immature birds that differ from the adult in having the chestnut of the forehead faintly indicated anteriorly and obsolete behind. In addition the blue-black spots on the under tail coverts are lacking, and in one bird there are faintly indicated pale margins on the feathers of the back. This species is known from the Tonga Islands but has not been reported from Nomuka previously. The large, broadened bill, characteristic of the genus *Hypurolepis* Gould, reaches its maximum development in this species, and appears remarkably strong and heavy for a swallow.

MUSCICAPIDAE.

HAPLORNIS, nom. nov.

The name *Muscylva* Lesson was first proposed in vernacular form in Lesson's *Traité d'ornith.*, 1830, p. 385, with a proper diagnosis. In

a following part of this same work on page 656 (published in 1831) the name *Muscylva* occurs in italics, this typography indicating that the author used it as a technical or Latin name, his intention in regard to this usage being outlined on page 651. *Muscylva* is therefore to be quoted from this second reference. Seven species are included in it by Lesson (p. 386) as follows:

- Muscicapa leucogaster*, Mus. de Paris. Cayenne. (Poiteau).
- Muscicapa rufiventris*, Mus. de Paris. Nouvelle-Hollande (Peron).
- Muscicapa albogularis* Mus. de Paris. Bengale. (Macé).
- Muscicapa aurocapillus*, Mus. de Paris.
- Muscicapa caerulea*, Gm.; le Petit azur; Enl., 666, fig. 1. Des îles Philippines, du Bengale.
- Muscicapa luzoniensis* Gm.; Levaill., pl. 151, fig. 1. De Madagascar.
- Muscicapa rufiventris* Gm.; l'Oranor, Levaill., pl. 155, fig. 1. De Batavia. (Diard.)

The first four of these names as listed above are *nomina nuda* at this place, although Pucheran (Arch. Mus. hist. nat., 1855, 7, p. 333) found that the first is equivalent to *Rhipidura pectoralis* (Jerdon) and the second to *Rhipidura rufiventris* (Vieillot). The third was described later by Lesson (Bélangier's Voyage Indes Orientales, 1831, pl. 264) as *Muscicapa* (*Muscylva*) *albogularis*, which equals *Rhipidura albicollis* (Vieillot). Pucheran states that he was unable to find the type of *Muscicapa auricapillus*.

On examining the remaining species in turn it is found that *Muscicapa caerulea* Gmelin is now placed in the genus *Hypothymis*, while *Muscicapa luzoniensis* Gmelin is in the genus *Penthornis*. The seventh species, *Muscicapa rufiventris* Gmelin, is apparently still unidentified, although "l'Oranor" of Levaillant is considered to be *Perierocotus peregrinus* (Linné). From this consideration it appears that of the seven names mentioned by Lesson under the genus *Muscylva*, only the last three are at all recognizable at the place of original publication, as the first four are *nomina nuda*. From this it appears therefore that G. R. Gray, (Handlist of birds, 1869, 1, p. 349) was in error when he restricted *Muscylva* to the first species given by Lesson, *Muscicapa leucogaster*. On the page cited he adopted *Muscylva* as a subgenus of *Todirostrum*, and under it listed *M. leucogaster* "Less. ex Mus. Par." from "Cayenne." On page 332 of the same volume of this publication he had already included *Muscylva* "Homb. & J." as a subgenus of *Rhipidura*.

The type of *Muscylva* Lesson, 1831, has never been properly designated, although Lesson (Compl. oeuvres Buffon, 1837, 8, p. 366) himself cited "*Muscicapa albogularis*" as the type. As it has been shown that this species was a *nomen nudum* in the original reference this designation is not valid. To eliminate the name *Muscylva* Lesson 1831 the type is here fixed as *Muscicapa caerulea* Gmelin, reducing *Muscylva* to a synonym of *Hypothymis* Boie, 1826.

In 1846, G. R. Gray (Gen. birds, 1846, 1, p. 258) named a bird from the Fiji Islands *Rhipidura lessoni*, basing the species on the "*Muscylva* de Lesson" of Hombron and Jacquinot (Voy. Pôle Sud. Zool., October, 1844, 3, pl. 11, fig. 2, Oiseaux). This bird was later described by Jacquinot and Pucheran on page 75, vol. 3, of the text of the work just cited, published in 1853, as *Muscylva lessoni*. With it was described another species, *M. pectoralis*. *Muscylva* was not designated as a new genus by these authors and it was not intended as new, but the name has been generally accredited to them since the date of its appearance in the Catalogue of birds in the British Museum (Sharpe, 1879, 4, p. 233). It is evident from the outline above that the status of *Muscylva* as a generic term was in hopeless confusion, so that it has seemed best to eliminate it and substitute a new name to avoid future complications. Following are emendations of *Muscylva* that have appeared:

Muscicylva Gray, Gen. birds, 1849, 3, app., p. 53.

Muscisylva Agassiz, Nom. zool. Aves, 1841, p. 88. (Not

Muscisylva Hodgson, 1844 and 1845).

Muscyla Gray, Cat. gen. and subgen. birds, 1855, p. 51.

58. HAPLORNIS LESSONI (G. R. Gray).

Rhipidura lessoni Gray, Gen. birds, 1846, p. 258. (Fiji Islands).

There are in the collection four "mummies" of this species, with sex not indicated, that were collected at Viti Levu, Fiji Islands, 16 December. The specimen of this bird that Peale (U. S. explor. exped., 1848, 8, p. 101) described as *Monarcha cinereus* was secured on this same island.

59. METABOLUS RUGENSIS (Hombron and Jacquinot).

Muscicapa rugensis Hombron and Jacquinot, Ann. sci. nat., 1841, ser. 2, 16, p. 312. (Ruk Islands).

An adult male was secured at Uala in the Truk Group (Middle

Caroline Islands). 16 February, 1900. This bird has extensive dark markings on the inner webs of the third, fourth, fifth, and sixth primaries and smaller areas on the other primaries, save the first, which is entirely white with a dark shaft. A spot in the center of the forehead (entirely surrounded by black) is white and there are two black feathers on the right side of the hind neck.

60. RHIPIDURA KUBARYI Finsch.

Rhipidura kubaryi Finsch, Proc. Zool. soc. London, 1875, p. 644. (Ponapé).

A male secured on Ponapé in the Eastern Carolines on 12 February, 1900, has the following measurements:—wing 76, tail 89.5, exposed culmen 10.5, tarsus 20.5.

61. MYIAGRA PLUTO Finsch.

Myiagra pluto Finsch, Proc. Zool. soc. London, 1875, p. 644. (Ponapé).

Two males, a female, and one other bird (a mummy, unsexed) were collected at Ponapé, 11 February, 1900. Both males have a brownish wash on the feathers of the chin, throat, and upper breast, a character that Dr. Finsch in his original description assigned to the female. This is indicated only slightly in the female in the present collection. The crown cap in both sexes is distinctly darker than the back with a sharp line of demarcation behind. It is probable that the two males are immature. The mummy may be an almost adult male, as it has the wash barely indicated on chin and throat, and in addition has the feathers of the upper breast glossed with bluish.

Measurements of the birds with sex indicated are as follows:—

No.	Sex	Wing	Tail	Exposed Culmen	Tarsus
U. S. N. M. 212,467	♂	80.0	74.3	12.5	20.5
" 212,468	♂	78.5 ¹	76.0	12.5	20.0
" 212,470	♀	81.0	75.0	14.0	22.0

62. MYIAGRA OCEANICA Jacquinot and Pucheran.

Myiagra oceanica Jacquinot and Pucheran, Voy. Pôle Sud. Zool., 1853, 3, p. 77. (Hogoleu).

A male and a female were secured at Uala in the Truk Group,

¹ Wing somewhat worn.

Middle Carolines, 16 February. The measurements of these two birds are as follows:

No.	Sex	Wing	Tail	Exposed Culmen	Tarsus
U. S. N. M. 212,471	♂	80.5	67.8	15.0	20.0
" 212,472	♀	76.5	63.5	15.0	21.5

63. *MYIAGRA TOWNSENDI*, sp. nov.

Characters.—Similar to *Myiagra vanikorensis* (Quoy and Gaimard) but adult male with back heavily glossed with green, glossy green of anterior under parts covering entire upper breast, posterior under parts darker, thighs blackish, under wing coverts darker, bill larger, tail and tarsus longer: Female with outer web of outer tail feathers extensively paler, crown grayer, back strongly washed with brown, and loreal region distinctly lighter than feathers of crown.

Type.—U. S. N. M. 212,464. Adult male. Polynesia: Fiji Islands; Kambara, 7 December, 1899, C. H. Townsend.

Description.—Crown, nape, upper back, sides of head, throat, and upper breast iridescent greenish slate-black; lower back, rump, and upper tail coverts between slate-gray and slate color, the feathers glossed with deep slate-green; wing and tail feathers sooty black; lesser and middle coverts iridescent greenish slate-black; greater coverts black with outer webs of feathers glossed with iridescent greenish slate-black; inner tertials more or less iridescent; lower breast amber-brown, becoming ochraceous tawny on sides and flanks, and merging into warm buff on the middle of the abdomen, lower tail coverts and sides of rump; thighs black, the feathers tipped with brown; under wing coverts light buff tipped with warm buff; bill and tarsus (in dried skin) black.

Measurements.—Males (two specimens) wing 76.0–77.5; tail 67.0; exposed culmen 14.5–15.2; tarsus 18.5–19.0.

Range.—Kambara, Fiji Islands.

Remarks.—Four specimens were collected on Kambara in the Fiji Islands, 7 December. Two (including the *Type*) are adult males and a third with the sex not indicated is supposed to be a female. A description of this latter bird is as follows:—Crown and hind neck dusky green-gray; sides of head and collar on hind neck slate color; anterior portion of crown washed with mouse-gray; lores indistinctly whitish; back, scapulars, rump, and upper tail coverts between buffy

brown and olive-brown; wings and tail dull black; lesser wing coverts between buffy brown and olive-brown; middle and greater coverts dull black tipped with this same brown; inner secondaries margined all around with light buff; rectrices tipped indistinctly with whitish; outer web of outer rectrix cream-buff; inner web edged with whitish; breast honey-yellow; feathers of throat with bases white, washed with honey-yellow; color of under parts changing to cinnamon-buff on abdomen, sides and under tail coverts; bill (in dried skin) brown.

The remaining specimen is marked questionably as an immature male. It resembles the female in general, but has the dark, adult plumage appearing on the upper surface. Beneath it is paler than the female, and has the throat almost white. The bill is black as in the adult males.

This fine species may be distinguished readily from *Myiagra vanikorensis* (Quoy and Gaimard), to which it is allied, by its much darker coloration, and larger, heavier bill.

SYLVIIDAE.

64. CONOPODERAS ATYPHA, sp. nov.

Characters.—Similar to *Conopoderas caffa* (Sparrman) but upper parts duller brown, pale margins on feathers of dorsal surface nearly obsolete, wing much shorter, bill shorter.

Type.—U. S. N. M. 212,493. Male. Polynesia: Paumotu Islands; Fakarava, 11 October, 1899. C. H. Townsend.

Range.—The Paumotu Islands, Polynesia (specimens examined from the following islands:—Whitsunday, Akiaki, Makemo, Apataki, Fakarava, Carlshoff, Tikei, Rangiroa, Makatea, and Hereheretue).

Remarks.—This distinct species is represented by a series of forty-two specimens. In this material there are six forms (including the typical one) that may be considered as subspecies.

As has been pointed out by Oberholser (Proc. U. S. N. M., 1905, 28, p. 900) *Turdus longirostris* of Gmelin (Syst. nat., 1789, 1, pt. 2, p. 823) based on Latham's long-billed thrush from the Island of Eimeo, is preoccupied by *Sitta caffa* of Sparrman (Mus. Carlson., 1786, fasc. 1, no. 4, pl. 4). As Sparrman assigns no locality for his bird the type-locality of *Sitta caffa* Sparrman is hereby designated as Tahiti, as this is the probable place from which his specimens came.

Conopoderas atypa apparently occurs upon most if not all of the

islands in the Paumotu Archipelago. With series from all the localities several forms in addition to those described here will be found without doubt. There is much variation in this species in specimens from the same localities. Specimens that have the entire plumage strongly suffused with rufescent color are common, and a very gray phase is also evident. In addition some specimens are more or less albinistic, and there is considerable individual variation in length of wing and tail without reference to locality. All these are confusing, and the actual divisions and relationships among the birds from different islands are evident only after careful study and comparison.

In the present study of this species no attempt is made to define the form inhabiting the isolated island of Hereheretue, as the only specimen taken there was preserved in spirits, but there is little question but that it is distinct. The delicate grays, browns, and yellows found in the plumage of *Conopoderas atypha* are liable to injury from immersion in alcohol, so that this bird is not available for color comparison. Measurements of the specimen are as follows:—wing 87.0, tail 84.0, exposed culmen 20.0, tarsus 29.5. It will be seen from these that the tail is longer than in any other specimen available at this time, while the culmen and tarsus are short when compared with the length of wing. Apparently the bird was pale below and quite brown above. To assign a subspecific name to this specimen under the circumstances would lead to confusion, so that it is merely listed here under the general discussion of the species.

Following are the subspecific forms of *Conopoderas atypha* at present recognized.

64. CONOPODERAS ATYPHA ATYPHA.

Description.—*Type* p. 206. Crown, hind neck, back, and scapulars olive-brown, the feathers of back edged more or less with paler; rump between honey-yellow and isabella color; upper tail coverts buffy brown; rectrices olive-brown, the outer pair edged with whitish and all save the two middle pairs tipped with whitish; remiges olive-brown, the feathers margined with tilleul-buff, tertials both margined and tipped with tilleul-buff; wing coverts olive-brown, the greater coverts tipped obscurely with dull ivory-yellow; spot on lower eyelid and superciliary stripe (extending forward to base of bill) ivory-yellow; loreal feathers fuscous, tipped with ivory-yellow; streak behind eye olive-brown; throat and breast whitish, washed lightly

with cartridge-buff; center of abdomen whitish; sides, flanks, bend of wing, under wing coverts and under tail coverts, dull pinkish buff; tibia pinkish buff.

Measurements.—Males (nine specimens), wing 82.5–89.6 (86.6); tail 70–80 (74.3); exposed culmen 19–22 (20.3); tarsus 29.5–31.5 (30.6). Female (1 specimen), wing 88.0; tail 75.5; exposed culmen 19.2; tarsus 27.6.

Range.—Fakarava, Carlshoff, and Tikei Islands, Paumotu Islands.

Remarks.—Two males and one female were secured at Tikei, 9 October, and six males and one alcoholic specimen were collected at Fakarava, 11 October. Specimens from Tikei are very slightly darker above than those from Fakarava. One bird from Carlshoff Island (secured by Peale) is more buffy below. The present material does not serve as sufficient grounds for recognizing these differences by name.

65. *CONOPODERAS ATYPHA RAVA*, subsp. nov.

Characters.—Similar to *Conopoderas atypa atypa* but under surface washed with massicot-yellow, under tail coverts averaging paler, less buffy, and superciliary stripe massicot-yellow, most obscure anteriorly.

Type.—U. S. N. M. 212,516. Male. Polynesia: Paumotu Islands; Whitsunday Island, 31 October, 1899. C. H. Townsend.

Description.—Crown, hind neck, back, and scapulars between buffy brown and olive-brown; rump and upper tail coverts buffy brown, the rump washed with deep olive-buff; rectrices, remiges, and wing coverts olive-brown; outer pair of rectrices margined lightly, and three outer pairs tipped slightly, with paler; greater wing coverts and inner tertials with paler tips and margins; primaries and secondaries margined with deep olive-buff; spot on lower eyelid and superciliary stripe above eye massicot-yellow, the superciliary becoming obscure as it passes forward to base of bill; loreal feathers fuscous with pale tips; auricular region dark olive-buff; under surface washed strongly with massicot-yellow, sides and flanks washed with brownish cream-buff; under tail coverts between pale olive-buff and olive-buff; bend of wing and under wing coverts washed with cream color; tibia olive-buff.

Measurements.—Males (four specimens) wing 84.5–90.0 (87.6); tail 72.0–76.0 (74.8); exposed culmen 18.5–20.5 (19.6); tarsus 29.2–30.7 (29.8).

Female (one specimen) wing 83.5; tail 67.0; exposed culmen 20.5; tarsus 31.0.

Range.—Whitsunday and Akiaki Islands, Paumotu Islands.

Remarks.—A male was taken on Akiaki, 30 October, and three males and one female on Whitsunday Atoll 31 October. The distinctly yellow cast of the under parts serves to distinguish this form from the other subspecies of *Conopoderas atypha* at present known. There is available only one bird from Akiaki and examination of more material will show without doubt that birds from this island are readily separable from those from Whitsunday. The single specimen at hand, a male, differs from birds from Whitsunday in being distinctly more buffy below, especially on the lower tail coverts. In addition it has the rump paler and the tail more extensively tipped with white.

66. *CONOPODERAS ATYPHA CRYPTA*, subsp. nov.

Characters.—Similar to *Conopoderas atypha atypha* but distinctly grayer above, and whiter, less buffy, below.

Type.—U. S. N. M. 212,507. Male. Polynesia: Paumotu Islands; Makemo, 20 October, 1899. C. H. Townsend.

Description.—Crown, hind neck, back, and scapulars hair-brown, the feathers with paler tips and edgings; rump dull avellaneous; upper tail coverts drab; rectrices, remiges, and greater wing coverts olive-brown; rectrices with slightly indicated pale margins, the four outer pairs tipped with whitish; lesser and middle wing coverts drab, margined indistinctly with pale drab-gray; primaries and secondaries margined with pale drab-gray; spot on lower eyelid and superciliary stripe above eye ivory-yellow, the superciliary more or less obscure anteriorly; loreal feathers fuscous with pale tips; auricular region between deep and dark olive-buff, becoming dark olive-buff posteriorly; throat and breast whitish washed with marguerite-yellow; this color becoming gradually buffy posteriorly until the under tail coverts are light buff; bend of wing, under wing coverts, sides and flanks light buff.

Measurements.—Males (three specimens) wing 89.5–90.0 (89.8); tail 77.0–80.0 (78.1); exposed culmen 20.2–21.0 (20.5); tarsus 30.0–31.0 (30.6).

Range.—Makemo Island, Paumotu Islands.

Remarks.—Three males, one specimen with sex not indicated, and two birds preserved in alcohol, were secured on Makemo, 20 October.

One male in the series examined has a strong rufescent wash on the entire plumage, the reddish suffusion being especially marked on the rump and posterior under parts. The others agree in being uniformly of a grayish cast.

67. *CONOPODERAS ATYPHA AGASSIZI*, subsp. nov.¹

Characters.— Similar to *Conopoderas atypa crypta* but back slightly grayer, crown distinctly darker than the back.

Type.— U. S. N. M. 212,491. Male. Polynesia: Paumotu Islands; Apataki, 7 October, 1899. C. H. Townsend.

Description.— Crown slightly grayer than olive-brown; hind neck, back, scapulars, and upper tail coverts between drab and hair brown; rump between smoke-gray and light grayish olive; rectrices and remiges olive-brown; lesser and middle wing coverts drab; greater wing coverts olive-brown, each feather margined broadly with drab; rectrices and remiges margined lightly with drab or light drab; no light tips evident on rectrices; spot on lower eyelid, and superciliary stripe above and behind eye olive-buff, the superciliary more or less obscure anteriorly; loreal feathers fuscous with obscure paler tips; auricular region between drab and hair-brown, paler anteriorly; under surface whitish; throat, middle of breast, and upper abdomen washed lightly with pale olive-buff; lower abdomen and under tail coverts whitish; sides of breast becoming strongly grayish; under wing coverts whitish; bend of wing marguerite-yellow.

Measurements.— Male (one specimen, *Type*) wing 89.0; tail 77.7; exposed culmen 19.0; tarsus 28.0.

Range.— Island of Apataki, Paumotu Islands.

Remarks.— One specimen, the type, was secured on Apataki, 7 October. This bird is nearest the form inhabiting Makemo Island, but differs from it in several particulars, none of which come within the range of individual variation as shown in the entire series of *Conopoderas atypa* examined. The crown is distinctly darker than the back, and in addition the under wing coverts and under tail coverts are much paler.

68. *CONOPODERAS ATYPHA NESIARCHA*, subsp. nov.

Characters.— Similar to *Conopoderas atypa atypa* but bill shorter; coloration above averaging more brownish, below more heavily suffused with buff.

¹ Named in honor of Alexander Agassiz.

Type.—U. S. N. M. 212,511. Male. Polynesia: Paumotu Islands; Rangiroa, 21 September, 1899. C. H. Townsend.

Description.—Crown, back, and scapulars between buffy brown and olive-brown; hind neck buffy brown; rump dresden-brown; upper tail coverts Saccardo's umber; rectrices and remiges olive-brown (somewhat faded); lesser wing coverts buffy brown; middle and greater wing coverts olive-brown, margined with buffy brown, remiges edged with buffy brown; rectrices tipped obscurely with tilleul-buff; lores, spot on lower eyelid and superciliary stripe cream-buff; malar region ivory-yellow; auricular region drab, with a wash anteriorly of olive-yellow; under surface pale olive-buff; sides of breast washed with buffy brown; sides and flanks washed with isabella color; under tail coverts pinkish buff; bend of wing and under wing coverts pinkish buff.

Measurements.—Males (four specimens) wing 84.2–89.5 (87.8); tail 72.0–78.5 (75.0); exposed culmen 18.3–18.5 (18.4); tarsus 29.0–31.2 (30.1).

Female (one specimen) wing 83.0, tail 70.5, exposed culmen 19.0, tarsus 29.5.

Range.—Island of Rangiroa, Paumotu Islands.

Remarks.—Four males, one female, and a specimen preserved in alcohol were collected on Rangiroa on 21, 22, and 23 September. This form is more buffy below than any of the other subspecies of *Conopoderas atypha* examined, save the one from Makatea (a description of which follows), and the short bill serves to distinguish it at once from all others. The single female examined is grayer above and less buffy below than the males. One male shows a tendency toward albinism, as it has a light bar across the ends of the inner greater coverts.

69. *CONOPODERAS ATYPHA EREMA*, subsp. nov.

Characters.—Similar to *Conopoderas atypha atypha* but larger; bill longer and heavier; coloration above brighter brown, rump more rufous, more buffy below especially on breast, sides, and flanks; tail more distinctly tipped with white.

Type.—U. S. N. M. 212,505. Male. Polynesia: Paumotu Islands; Makatea, 6 October, 1899. C. H. Townsend.

Description.—Crown and hind neck slightly darker than buffy brown; back and scapulars olive-brown, the feathers margined rather

obscurely with dull pinkish buff; rump between clay color and tawny olive; upper tail coverts Saccardo's umber; rectrices and remiges olive-brown; lesser wing coverts tawny olive; middle and greater coverts olive-brown the feathers margined with pinkish buff; outer web of outer tail feather and tips of others obscurely white; rest of rectrices and remiges margined with pale olive-buff; superciliary stripe and spot on lower eyelid cream-buff; superciliary distinct; lores dull white; auricular region changing from dull cream-buff anteriorly to buffy brown posteriorly; throat and upper breast and abdomen washed with ivory-yellow; lower breast washed with chamois, this color deepening somewhat on the sides; flanks washed with cinnamon-buff; under tail coverts pinkish buff; bend of wing pinkish buff; under wing coverts between pinkish buff and cinnamon-buff.

Measurements.—Males (four specimens) wing 88.2–91.5 (90.1); tail 78.2–82.0 (79.4); exposed culmen 21.0–22.5 (22.0); tarsus 30.0–33.5 (31.5).

Range.—Island of Makatea, Paumotu Islands.

Remarks.—Four specimens were secured on Makatea Island, 26 September, and two more were added to the collection from the same locality, 6 October. Four of these birds are males; the other two do not have the sex indicated certainly. This is the most distinct of all the forms of *Conopoderas atypha* at present known, a circumstance to be expected as Makatea is cut off by deep ocean from the main Paumotu Group. The central islands lie on a plane bounded by the thousand fathom curve, while Makatea is outside of this irregular line.

Two specimens show an indication of albinism. One has the rectrices, save for the two central pairs, entirely white. In the other one the outer rectrix is white, and there are irregular white blotches on the tips of the others. In size, and in more prominent pale margins on the feathers of the dorsal surface this form shows a very slight approach toward *Conopoderas caffa* of Tahiti. It is so distinct, however, in its much browner coloration, smaller size, and general appearance that it cannot be considered as a connecting link between that species and *C. atypha*. *C. a. crema* is distinguished from all other forms of *C. atypha* known at present by its larger size, longer bill, and much more buffy plumage. The differences are in fact almost sufficient to give it recognition as a separate species. In view of the great variation in the wide ranging *C. atypha*, however, it seems better to consider the Makatea bird as a subspecies.

70. *CONOPODERAS PERCERNIS*, sp. nov.

Characters.—Similar to *Conopoderas mendanae* (Tristram), but outer web of the external rectrices dusky (with only a faint yellow margin), more yellow below, with basal portion of the inner webs of the primaries white very faintly tinged with yellow.

Type.—U. S. N. M. 212,479. Male. Polynesia: Marquesas; Nukuhiva, 15 September, 1899.

Description.—Feathers of crown and line behind eye, with centers deep olive to dark olive, this color merging into a broad margin of light yellowish olive; neck, back, and scapulars between yellowish olive and dark greenish olive, this color changing to light yellowish olive on the tips of the feathers on back and scapulars, on rump changing to deep colonial-buff; upper tail coverts light brownish olive with margins more yellowish; feathers of wings and tail fuscous black; primaries edged with light yellowish olive; secondaries edged broadly with colonial-buff and primaries and secondaries tipped with marguerite-yellow; wing coverts fuscous, margined broadly with colonial-buff; rectrices tipped with marguerite-yellow, the tips broader on the external feathers, lessening in extent, especially on the inner webs, toward the central pair; outer pair with a very narrow obscurely indicated paler margin for distal half; under surface, save abdomen, barium-yellow to citron-yellow; center of abdomen white; lores whitish; superciliary stripe, malar and auricular region, and bend of wing strontian-yellow; under wing covers naphthalene-yellow; inner webs of primaries for basal half white.

Measurements.—Seven males wing 98.6–103.0 (100.5); tail 86.2–92.3 (88.7); exposed culmen 22.5–24.0 (23.3); tarsus 31.0–33.3 (32.4).

Range.—Island of Nukuhiva, Marquesas Islands.

Remarks.—This species is represented by nine skins, two mummies, and an alcoholic specimen secured at Nukuhiva, 15, 16 September, 1899. The series is remarkably constant in coloration, there being no tendency toward albinism such as is often found in the island inhabiting species of this genus. The seven birds that have the sex determined are males.

No specimens of *Conopoderas mendanae* (Tristram) are available for comparison, but an excellent description is found in the Catalogue of birds in the British museum, 1883, 7, p. 526, and with the original description of Canon Tristram (Ibis, 1883, p. 43) is given a colored figure that shows the characters of the bird distinctly. In this plate

of *C. mendanae* the yellow of the outer tail feathers is especially noticeable. Twelve specimens in all of *Conopoderas percernis* have been examined, and all are constant in the characters assigned in the diagnosis above.

71. CONOPODERAS SYRINX (Kittlitz).

Sylvia syrinx Kittlitz, Mem. Acad. imper. sci. St. Petersburg, 1835, 2, livr. 1, p. 6, pl. 8. (Lugunor and Uleei).

One female was taken at Ponapé, Eastern Carolines, and one male, two females and an immature bird (mummy) come from Uala in the Truk Group, collected 16 February, 1900. There are two forms indicated in this material, but as specimens that may be considered typical *C. syrinx* of Kittlitz are not available for comparison it is not advisable to separate them at this time. Kittlitz described this bird from the Lugunor and Uleei Groups. Finsch (Journ. Mus. Godeffroy, 1876, 12, p. 30) says that Kittlitz also included birds from Ualan. Specimens from none of these localities are available in the U. S. N. M. collections. The birds from Uala, together with a specimen marked Ruk collected by Kubary, differ from the bird from Ponapé in being distinctly paler. The head and neck are less brownish, especially on the sides of the neck, and are much grayer than the back. The rump and upper tail coverts are paler, and the under parts are less extensively cinnamon-buff especially on the sides and under tail coverts. Birds from the two islands agree in measurements.

CONOPOPHAGIDAE.

72. LALAGE PACIFICA (Gmelin).

Turdus pacificus Gmelin, Syst. nat., 1789, 1, pt. 2, p. 813. (Friendly Islands).

Three males were taken at Eua, 28 November, two males at Tongatabu, 30 November, a female at Nomuka, 2 December, and two males at Vavau, 4 December, all in the Tonga Group. In addition a female was secured at Kambara, 7 December, and a male in immature plumage at Viti Levu 18 December, in the Fiji Islands.

Birds from Eua have the rump slightly paler and average a trifle

larger than others but the differences are too slight to be dependable in such a small series. Average measurements of males from the Tonga Islands follow.

<i>Sex</i>	<i>Locality</i>	<i>Wing</i>	<i>Tail</i>	<i>Exposed Culmen</i>	<i>Tarsus</i>
2 ♂ ♂	Vavau	96.7	66.7	13.5	25.9
2 ♂ ♂	Tongatabu	99.0	66.5	13.5	25.9
3 ♂ ♂	Eua	99.2	67.1	14.0	27.1

73. LALAGE WHITMEEI Sharpe.

Lalage whitmeei Sharpe, Mittheil. K. zool. mus. Dresden, 1878, p. 371. (Savage Island).

Four males and two females were secured at Niue, or Savage Island, 25 November. Both of the females are immature. Each shows a strong wash of bright brown on the lesser and middle wing coverts.

LANIIDAE.

74. PACHYCEPHALA JACQUINOTI Bonaparte.

Pachycephala jacquinoti Bonaparte, Conspec. gen. Avium, 1850, 1, p. 329. (Vavau).

Four adult males and one male in immature plumage were collected at Vavau, Tonga Islands, 4, 5 December. The male in juvenal plumage is duller in color than the adults, and has the crown deep mouse-gray with a few feathers of the adult plumage showing. The chin and throat are whitish, the feathers tipped with deep mouse-gray, especially laterally, and the upper breast is light drab. A few black feathers show here also. The side of the head is light grayish olive, and the auricular region wood-brown. The light ring on the hind neck is barely indicated, and the under parts are much paler yellow.

Gray (Gen. birds, 1845, 1, p. 271) lists this form under *Pachycephala* and refers to the plate published by Hombron and Jacquinot (Voy. Pôle Sud. Zool. Oiseaux, October, 1844, pl. 5, fig. 2) where the bird is called "Pie-grièche à masque noir" but does not designate a name for it.

PRIONOPIDAE.

75. PINAROLESTES HEINEI (Finsch and Hartlaub).

Myiolestis heinei Finsch and Hartlaub, Proc. Zool. soc. London, 1869, p. 546.
(Tonga Islands).

Two males and three females were secured at Nomuka, 2 December. The light margin of the edges of the mandibles seems very characteristic in this species. The sexes are similar in color. There seem to be no previous records of the species from this island.

76. PINAROLESTES NESIOTES, sp. nov.

Characters.—Similar to *Pinarolestes vitiensis* (Hartlaub) but larger, with heavier bill, and with white tips absent on four central rectrices and more restricted on the remaining feathers.

Type.—U. S. N. M. 212,438. Female. Polynesia: Fiji Islands; Kambara, 7 December, 1899. C. H. Townsend.

Description.—Crown and hind neck mummy-brown, changing to raw umber on the back and rump; wing and tail fuscous, the wing coverts, outer webs of primaries and edgings of secondaries raw umber; rectrices save the two central pairs lightly tipped with white; four central tail feathers immaculate, with darker cross bars faintly indicated in certain lights; throat, breast, and abdomen smoke-gray; feathers of forehead with smoke-gray bases, forming an obscure patch of pale color; eye ring and lores obscurely blackish; auricular region hair-brown; rami, sides of head behind eye, sides of neck, and sides of breast light grayish olive; sides of abdomen and flanks washed with cinnamon-brown; under tail coverts buffy brown; tibia mouse-gray.

Measurements.—Female (*Type*) wing 95; tail 80; exposed culmen 21; tarsus 25.

Range.—Island of Kambara, Fiji Islands.

Remarks.—One female (the *Type*) was secured at Kambara, Fiji Islands, 7 December, 1899. The genus does not seem to have been known from this island previously. Study of a large series of *Pinarolestes* of the *vitiensis* group will probably show that the bird described here is a subspecies of *vitiensis*. As given by Sharpe (Cat. birds Brit. mus., 1877, 3, p. 300) the wing of *P. vitiensis* (sexes not indicated)

varies from about 79 to 86 millimeters. As females in this genus are smaller than males it appears that the bird described here is a very large form. *Pinarolestes nesiotes* appears to resemble *P. compressirostris* (Layard), as it has a large and somewhat compressed bill, but differs from that form (judging from descriptions) in larger size, and shorter bill, while in addition it lacks white tips on the central tail feathers.

STURNIDAE.

77. ACRIDOTHERES TRISTIS (Linné).

Paradisea tristis Linné, Syst. nat., ed. 12, 1766, 1, p. 167. ("Philippines.").

A male of this species was collected on Viti Levu, in the Fiji Islands, 14 December. There seem to be no previous records of this species here, and no information is available at present to show when it was introduced.

EULABETIDAE.

78. APLONIS TABUENSIS (Gmelin).

Lanius tabuensis Gmelin, Syst. nat., 1788, 1, pt. 1, p. 306. (Friendly Islands).

Of seven specimens that were collected four were taken on Eua, 28 November, two on Nomuka, 2 December, and one on Vavau, 4 December, all in the Tonga Group. One does not have the sex indicated, the others are all males. Specimens from the three localities agree closely. The single bird from Vavau has the tarsus longer, and is somewhat clearer gray below than the others, while birds from Eua have the dark mark on either side at the base of the mandible slightly more prominent. Otherwise the specimens in the series are very similar. Measurements follow:—

No.	Sex	Locality	Wing	Tail	Exposed Culmen	Tarsus
U. S. N. M. 212,373	♂	Eua	113.0	63.0	20.5	27.0
" 212,374	♂	"	112.0	64.5	22.0	30.0
" 212,376	♂	"	114.5	70.0	20.0	27.0
" 212,377	♂	Nomuka	111.0	67.5	21.0	29.0
" 212,378	♂	"	114.0	63.5	20.5	29.5
" 212,372	♂	Vavau	113.5	68.5	20.0	33.0

79. *APLONIS VITIENSIS* Layard.

Aplonis vitiensis Layard, Proc. Zool. soc. London, 1876, p. 502. (Fiji Islands).

A female was taken on Kambara in the Fiji Islands, 7 December. This bird is an adult in very worn plumage.

80. *APLONIS BRUNNESCENS* Sharpe.

Aplonis brunescens Sharpe, Cat. birds Brit. mus., 1890, **13**, p. 132, pl. 6. (Savage Island).

There are in the collection six skins and one alcoholic specimen collected on Niue or Savage Island, 25 November. The sexes are apparently similar in color, but females have the wing averaging shorter than males. One male has a strong rufescent wash on the feathers of the entire plumage. This wash is most pronounced on head, neck, breast, and back. Following are measurements of the skins examined:—

<i>N o.</i>	<i>Sex</i>	<i>Wing</i>	<i>Tail</i>	<i>Exposed Culmen</i>	<i>Tarsus</i>
U. S. N. M. 212,379	♂	103.5	61.0	18.0	31.0
" 212,380	♂	98.0	54.0	17.0	29.0
" 212,381	♂ ?	102.0	55.0	17.0	30.0
" 212,382	♀	98.0	58.0	17.0	31.0
" 212,383	♀ ?	98.0	55.5	17.0	28.5
" 212,384	♀	97.0	54.5	17.0	29.5

Oberholser (Bull. 98 U. S. N. M., 1917, p. 58, 59) has recently pointed out the distinctions between the genus *Lamprocorax* Bonaparte and *Aplonis* Gould, showing that in the former group the second primary (counting from the outside, and beginning with the spurious primary) is longer than the fifth, while in *Aplonis* the second primary is sometimes equal to but usually shorter than the fifth. *Aplonis brunescens* was not included in his list of species studied in this connection, but upon examination is found to have the second primary shorter than the fifth so that this species is a true *Aplonis*. *Aplonis cinerascens* Hartlaub and Finsch also belongs here, as it has the more rounded wing found in this group.

81. *APLONIS OPACA* (Kittlitz).

Lamproth[ornis] opaca Kittlitz, Kupfertafeln naturgesch. Vögel, 1833, 2, p. 11, pl. 15, fig. 2. (Marianne and Caroline Islands).

Nine specimens of this bird were secured in the Caroline Islands. Four males and one female were taken on Kusaie, 8 February, one male on Ponapé, 11 February, and a female on Uala in the Truk Group, 16 February. In addition an alcoholic specimen (preserved now as a mummy) was taken on Kusaie 9 February, and there are two skins marked from the Caroline Islands with no definite locality given.

These birds all seem to be immature, and none show iridescence on the feathers to any great degree. These specimens average smaller than a series from Guam in the collection of the U. S. N. M., but as immature birds in the same stage of plumage are lacking from the Ladrone Islands specimens from the two localities are not directly comparable. Oberholser (Bull. 98 U. S. N. M., 1917, p. 59) has shown that the name *Lamprothornis opaca* given by Kittlitz as a manuscript name of Lichtenstein is available for this present species.

Measurements of the specimens from the Caroline Islands follow:—

No.	Sex	Locality	Wing	Tail	Exposed Culmen	Tarsus
U. S. N. M. 212,363	♂	Ponapé	121.0	84.0	23.5	31.0
" 212,364	♂	Kusiae	111.0	—	21.5	28.5
" 212,365	♂	"	116.0	74.5	21.0	30.5
" 212,366	♂	"	121.5	79.0	22.5	30.5
" 212,368	♂	"	123.5	81.5	23.0	30.0
" 212,362	♀	Uala	116.5	66.0	20.5	31.5
" 212,367	♀	Kusaie	121.0	75.0	21.0	30.0

MELIPHAGIDAE.

82. *MYZOMELA RUBRATRA RUBRATRA* (Lesson).

Cinnyris rubrater Lesson, Dict. sci. nat., 1827, 50, p. 30. ("Oualan").

Four males, three females, and an immature bird secured on Kusaie in the Middle Carolines, 8, 9 February were made into skins and in addition eight birds were preserved as mummies. Males and females

are similar in color, but the latter have the wings and tail somewhat shorter. Adults seem to vary in depth of color with age. The immature bird is dull black above and brownish below while red feathers are beginning to show on the back and about the head.

Two male birds secured on Uala, 16 February, are not quite typical of this form. The red of the plumage is slightly paler, approaching *M. r. dichromata* from Ponapé. As these specimens from Uala agree otherwise with the large series from Kusaie they are placed with that form for the present. With a larger series more striking differences may be apparent.

Cinnyris rubrater of Lesson is usually quoted as from Voy. Coq. 1826, p. 678. According to Sherborn and Woodward (Ann. mag. nat. hist., 1901, ser. 7, 7, p. 391) Voy. Coq., 1, pt. 2, p. 678, should date from 1830. This makes the first reference date from the Dictionnaire des science naturelles, 50, p. 30, as this volume appeared in 1827. The description there given is practically identical with that appearing under the later reference. In his description Lesson says, "cette espèce, qui existe au Muséum d'histoire naturelle, habite les îles Philippines, où l'a trouvée M. Dussumier, et l'île d'Oualan, où j'en ai tué un grand nombre d'individus." In assigning it to the Philippines Lesson was in error as the species is confined to the Ladrone, Pelew, and Caroline Islands. His statement may have basis in the fact that vessels proceeding to the Philippines in the old days usually touched at Guam, so that M. Dussumier may have seen and collected the species there. From this Lesson may have attributed statements or specimens emanating from M. Dussumier to the Philippine Islands, as it was there that that naturalist carried on the major part of his work. The type-locality must stand as Ualan (known now as Kusaie) from which the large series in the present collection came.

83. MYZOMELA RUBRATA DICHROMATA, subsp. nov.

Characters.—Similar to *Myzomela rubrata rubrata* (Lesson) but black markings of head deeper in color and more extensive, covering orbital ring, lower eyelids, antorbital and loreal region, and extending around the base of the bill on forehead and chin, red of plumage slightly paler.

Type.—U. S. N. M. 212,413. Adult male. Polynesia: Eastern Caroline Islands; Ponapé, 11 February, 1900. C. H. Townsend.

Description.—Wings, scapulars, a broken band across shoulders,

tail, thighs, under wing coverts, lores, antorbital region, orbital ring, lower eyelids and anterior portion of forehead and chin black, the latter connecting with the loreal region so that there is a continuous ring of black around the bill; under tail coverts and lower abdomen slightly duller black; rest of plumage including most of head, back, tips to some of scapulars, upper tail coverts, throat, breast, and upper abdomen between scarlet-red and scarlet.

Measurements.—Males (two specimens) wing 76.0–79.0; tail 50.0–52.5; exposed culmen 18.0–18.5; tarsus 22.0.

Female (one specimen) wing 70.0; tail 45.0, exposed culmen 16.0; tarsus 20.5.

Range.—Island of Ponapé, Eastern Caroline Islands, Polynesia.

Remarks.—An adult and an immature male, an immature female, and an adult specimen preserved as a mummy were collected on Ponapé in the Eastern Carolines, 11, 12 February. This form, though paler than *Myzomela r. rubrata* (Lesson) from Kusiae, the type-locality, has the red in its plumage darker than the color found in *Myzomela r. saffordi* Wetmore (Proc. Biol. soc. Washington, 1917, 30, p. 117) from Guam. The immature plumages show nothing remarkable.

The recognized forms of the red and black honey-eaters with their ranges as known at present are as follows:—

MYZOMELA RUBRATA RUBRATA (Lesson). Kusae, Uala (not typical). This form probably occurs elsewhere in the Middle and Eastern Carolines.

MYZOMELA RUBRATA DICHROMATA, Wetmore. Ponapé.

MYZOMELA RUBRATA SAFFORDI Wetmore. Guam, Saipan (specimens from other islands in the Ladrone Group not seen).

84. MYZOMELA NIGRIVENTRIS Peale.

Myzomela nigriventris Peale, U. S. explor. exped., 1848, 8, p. 150. (Samoan Islands).

One bird, an adult, from Upolu, Samoan Islands, with date of collection not marked was preserved as a mummy. Gadow (Cat. birds Brit. mus., 1884, 9, p. 130) indicates that *Myzomela nigriventris* is a subspecies of *M. cardinalis*. The material at hand is not adequate for proper comparison, in default of which *M. nigriventris* is for the present accorded the rank of a species.

85. MYZOMELA JUGULARIS Peale.

Myzomela jugularis Peale, U. S. explor. exped., 1848, 8, p. 150. (Feejee Islands).

Three males and one other specimen with sex not marked were secured on Kambara, 7 December, and two mummies taken 16 December, were preserved from Viti Levu. Both localities are in the Fiji Group. Birds from Kambara are slightly larger than specimens from other localities, but the series available is too small to show reliable differences between insular forms.

Measurements of specimens with sex indicated are as follows:—

No.	Sex	Locality	Wing	Tail	Exposed Culmen	Tarsus
M. C. Z. 81,987 (U. S. N. M. 212,420)	♂	Kambara	58.0	38.0	16.5	17.0
" 212,421	♂	"	60.0	37.0	16.5	17.5
M. C. Z. 81,988 (" 212,422)	♂	"	60.0	39.0	17.0	17.5

86. MELIPHAGA CARUNCULATA (Gmelin).

Certhia carunculata Gmelin, Syst. nat., 1788, 1, pt. 1, p. 472. (Tongatabu).

Eleven specimens of this species were collected. The localities and dates of collection are as follows:—two males, one female, and one bird with sex not indicated from Eua, 28 November; two males from Tongatabu, 30 November; three males and one female from Nomuka, 2 December, all from the Tonga Group, and an immature bird from Upolu, Samoan Islands, with sex and date not marked. The specimens from the Tonga Islands seem very uniform. Birds from Nomuka are slightly larger than the others, though in very worn plumage. Two specimens from Eua are immature birds in fresh bright plumage. The specimen from Upolu is not yet fully grown. In it the cheek wattles are small, and the head is paler than in others.

Measurements of these birds follow:—

No.	Sex	Locality	Wing	Tail	Exposed Culmen	Tarsus
U. S. N. M. 212,388	♂	Eua	100.0	85.0	23.0	32.0
" 212,389	♂ im.	"	100.5	84.5	23.5	31.0
" 212,394	♂	Tongatabu	103.5	88.0	25.0	32.5
" 212,395	♂	"	100.5	84.0	—	31.5
" 212,390	♂	Nomuka	105.5	88.0	23.0	30.0
" 212,392	♂	"	105.0	85.0	23.5	30.0
" 212,393	♂	"	108.0	86.5	23.5	31.0
" 212,386	♀	Eua	94.0	78.5	21.0	29.5
" 212,391	♀	Nomuka	92.5	75.5	21.0	28.0

87. MELIPHAGA PROCERIOR (Finsch and Hartlaub).

Ptilotis procerior Finsch and Hartlaub, Beitr. fauna Central-Polynesiens, 1867, p. 62, pl. 5, fig. 1. (Ovalau).

Four specimens were secured on Viti Levu in the Fiji Islands. One is a male, another is marked male with a query, and on the labels of the other two birds the sex is not indicated. An immature bird not yet fully grown has the bare malar space much reduced in size, and the black markings about the head are duller, but otherwise the bird is similar to adults. Wilesworth (*Aves Polynesiae*, 1891, p. 34-35) has divided this species into several subspecies of which these birds should represent the typical form. As other specimens are not available for comparison no attempt is made here to distinguish between forms from the various islands.

Measurements of three adults follow:—

No.	Sex	Wing	Tail	Exposed Culmen	Tarsus
U. S. N. M. 212,397	♂	94.5	79.5	25.5	29.0
" 212,398	♂ ?	95.0	79.5	24.0	29.0
" 212,399	?	100.0	82.5	24.5	30.0

ZOSTEROPIDAE.

88. ZOSTEROPS SEMPERI OWSTONI Hartert.

Zosterops semperi owstoni Hartert, Nov. zool., 1900, 7, p. 2. (Ruk).

Four females of this species were secured at Uala in the Truk Group, Middle Carolines, 16 February. These vary somewhat in the depth of black on the lores and under the eye, but this may be due to age. The ear coverts are only slightly paler than the crown. Measurements of these specimens are as follows:—

<i>No.</i>	<i>Sex</i>	<i>Wing</i>	<i>Tail</i>	<i>Exposed Culmen</i>	<i>Tarsus</i>
U. S. N. M. 212,429	♀	53.0	35.6	9.5	19.0
“ 212,430	♀	52.3	35.6	10.4	20.0
“ 212,431	♀	54.3	36.0	9.2	19.0
M. C. Z. 81,986 (“ 212,432)	♀	54.0	35.2	10.0	20.4

89. ZOSTEROPS FLAVICEPS Peale.

Zosterops flaviceps Peale, U. S. explor. exped., 1848, 8, p. 95. (Venua-levu).

A single specimen collected on Viti Levu, 16 December, is preserved as a mummy. This bird has been called *Z. flaviceps* provisionally, as specimens of allied races from Australia and elsewhere are not at hand so that it is not possible to settle the true status of this form. It is probable that eventually it may be established as a subspecies of *Z. lateralis* (Latham). The present specimen resembles closely the type of *Z. flaviceps*, which is preserved in the U. S. N. M., and agrees with the description of that form in having the under tail coverts distinctly yellow. It has the following measurements:—wing 56.0; tail 45.0; exposed culmen 12.0; tarsus 18.3.

90. ZOSTEROPS CINEREA (Kittlitz).

Drepanis cinerea Kittlitz, Kupfertafeln naturgesch. Vögel., 1832, 1, p. 6, pl. 8, fig. 2. (Ualan).

Two males were collected on Kusaie, Eastern Carolines, 9 February. These measure as follows:—

No.	Wing	Tail	Exposed culmen	Tarsus
M. C. Z. 81,985 (U. S. N. M. 212,426)	63.0	39.0	13.0	20.5
“ 212,427)	62.0	36.2	12.5	20.0

One of these specimens still has the tongue in place. The tip is divided into a number of filaments, all fine, but varying in size, that tend to turn somewhat in slow spirals.

91. ZOSTEROPS PONAPENENSIS Finsch.

Zosterops ponapensis Finsch, Journ. mus. Godeffroy, 1876, 12, p. 27, pl. 2, fig. 1. (Ponapé).

One male was collected on Ponapé in the Eastern Carolines, 11 February. Besides being more brownish in coloration this species is smaller than *Z. cinerea*. The bill in particular is shorter. Meas-

urements of this specimen are as follows:—wing 59.2; tail 38.2; exposed culmen 11.0; tarsus 20.0.

Though the plate given by Finsch is marked *ponapensis*, in the original description of this bird the name is given as *Zosterops ponapensis*.

PLOCEIDAE.

LONCHURA CASTANEOTHORAX (GOULD).

Amadina castaneothorax Gould, Synop. birds Australia, 1837, pt. 2, pl. 21. (Cairns, Queensland).

A bird marked questionably as a female was taken at Tahiti in the Society Islands, 3 October. It has the under tail coverts white with brownish bases. An adult male was secured at Bora Bora in the same group, 17 November. This introduced species does not seem to have been recorded previously.

93. AEGINTHA TEMPORALIS (Latham).

Fringilla temporalis Latham, Ind. ornith. Suppl., 1801, p. xlviii. (New South Wales).

A male was secured at Tahiti, in the Society Islands, 13 November, and two females were collected the following day. This is an introduced form that does not seem to have been recorded here previously.